ENGINEERING NEWS-RECORD

Erwin S. Wolfson: From lemonade to Grand Central City p.55

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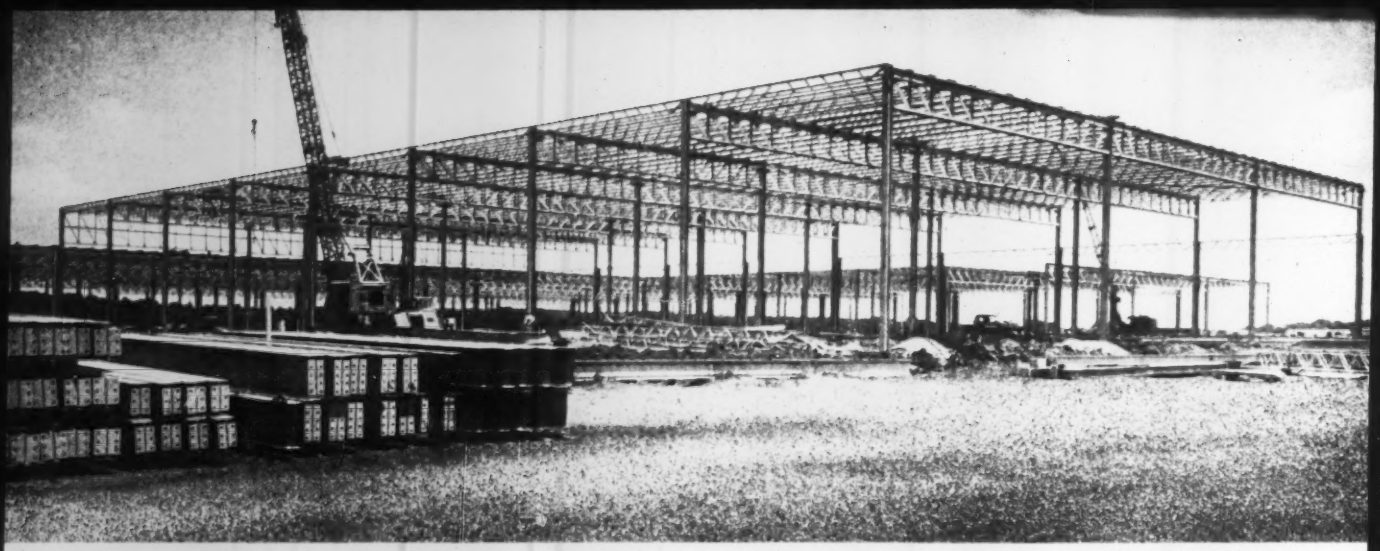

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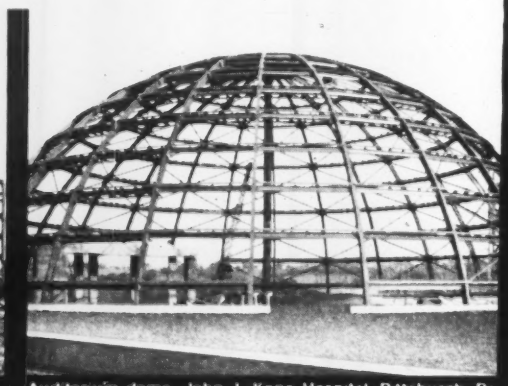
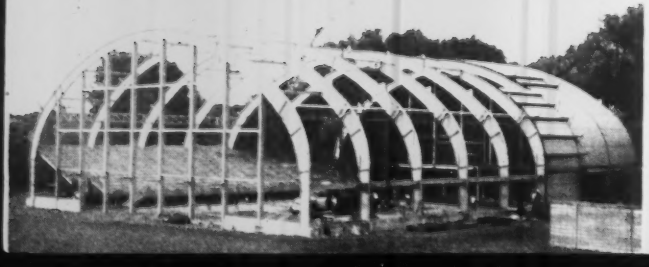


Auditorium dome, John J. Kane Hospital, Pittsburgh, Pa



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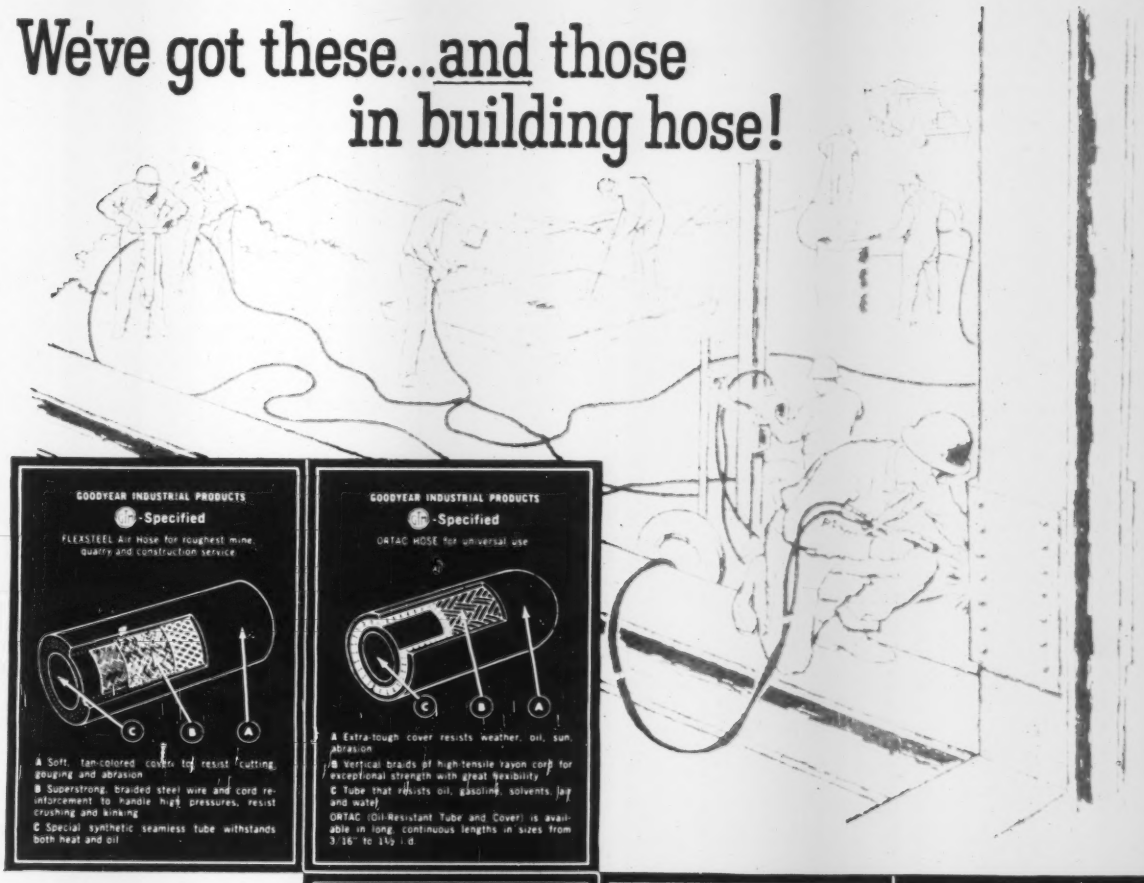

GOODYEAR INDUSTRIAL PRODUCTS

GY-Specified

FLEXSTEEL Air Hose for roughest mine, quarry and construction service

A Soft, tan-colored cover to resist cutting, gouging and abrasion

B Superstrong, braided steel wire and cord reinforcement to handle high pressures, resist crushing and kinking

C Special synthetic seamless tube withstands both heat and oil

GOODYEAR INDUSTRIAL PRODUCTS

GY-Specified

ORTAC HOSE for universal use

A Extra-tough cover resists weather, oil, sun, abrasion

B Vertical braids of high-tensile rayon cord for exceptional strength with great flexibility

C Tube that resists oil, gasoline, solvents, lay and water

ORTAC (Oil-Resistant Tube and Cover) is available in long, continuous lengths in sizes from 3/16" to 1¼" i.d.

GOODYEAR INDUSTRIAL PRODUCTS

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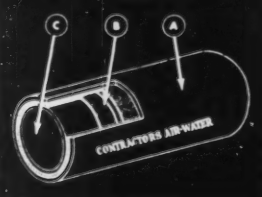


A Rugged cover that's both abrasion- and sun-resisting — continuously print-branded for easy identification

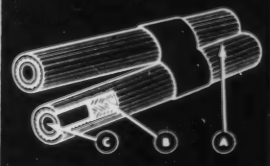
B Extra-tough braids of high-tensile rayon cord to handle pressures, resist crushing or kinking

C Special nonporous tube resists alkali or slightly acid water

GOODYEAR INDUSTRIAL PRODUCTS

GY-Specified

SPIRAFLEX Welding Hose for oxyacetylene welding, cutting, chipping



A Corrugated cover for firm grip and long wear — one line red, the other green for hook-up identification

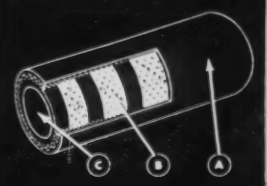
B Superstrong rayon braid reinforcement

C Nonporous, nonblooming, nonflaking tube

GOODYEAR INDUSTRIAL PRODUCTS

GY-Specified

FLEXSTEEL Steam Hose for high pressures and temperatures in severe service



A Extra-tough cover resists heat, aging and abrasion

B High-tensile braided steel wire reinforcements for maximum strength with flexibility

C Extremely heat-resistant tube

HIGH pressure or low—for air, water, steam, oil or gas—the smart choice in hose is Goodyear.

For Goodyear hose is built for builders: Its cover is super-tough to resist rough handling. It's heavily muscled with high-tensile cord or steel reinforcements. It resists kinking or crushing. Yet it's flexible and easy to maneuver.

Wouldn't it pay you, then, to insist on Goodyear quality on your next hose-using job? Check with your Goodyear Distributor for details on the special line that's designed to meet every contracting need. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."

the big name in hose is

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THE GREATEST NAME IN RUBBER

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16 Working Days

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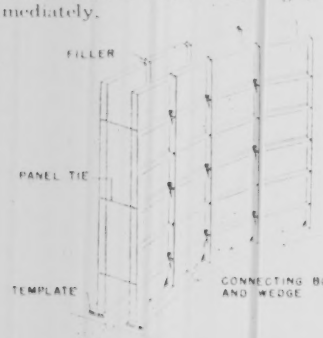
. . . Pour Sewage Treatment Plant in Record Time

One of the speediest sewage treatment plant projects ever undertaken in the Southwest was completed in 16 working days near Phoenix, Arizona. Capacity of plant is rated at 5 mgd. It has a 700,000 gallon digester.

F. H. Antrim Construction Company used 15,500 square feet of Symons Steel-Ply panels. An important factor in selecting Symons Forms was that they could be erected on one side of the circular tanks without installing ties immediately.



Forms were contracted for on a rental basis with an option to purchase. Later, Antrim decided that the forms were so well adapted to his work that he purchased 14,000 square feet of the panels.

Folder giving the complete Antrim story sent FREE upon request.

Symons

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Watch a Northwest Shovel at work in rock! The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. The swing is smooth. The load is spotted in one clean move. It's in the truck and the dipper is back in the bank.

Hour after hour—day after day—yard after yard, that's what makes production. Your Northwest is always ready to go. *We hear it everywhere and Northwest users will tell you so.* The "Feather-Touch" Clutch Control makes operation easy without resorting to pumps, compressors and other delicate mechanisms. The Cushion Clutch eliminates the detrimental effects of shock loads and makes ample power safe. It brings you a combination of advantages that has proved its ability to get high output in rock and make easy digging easier. It gets things done!

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⅜ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

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LINK-BELT SPEEDER LS-78 SHOVEL-CRANES

change the ground rules for 3/4-yd. performance !

Bold new base-to-boom engineering!

Every move is an exciting demonstration of performance that writes a new set of ground rules for what a ¾-yd. shovel-crane should do! The all-new engineered LS-78 has the look and feel of stamina and strength. And it's out to let you know it with perfect balance of power, weight, speed and control. Precision-built, fully convertible, attractively priced . . . the bold new LS-78 creates dozens of *new ways* to widen your profit margins!

Power controls for the man-in-command

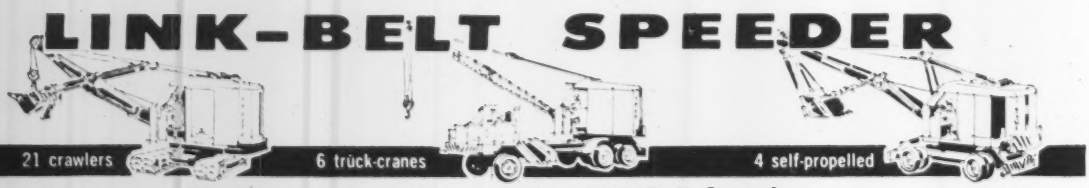
LS-78's exclusive Speed-o-Matic power hydraulic controls quicken cycles (up to 25% spurt output, side-step operator fatigue. Split-control stand gives unobstructed vision of below-grade excavating. Flick-of-the-wrist levers trigger instantaneous, oil-smooth response. No jump, jerk or lag. From start-up to shut-down, your man-in-command stays mid-morning "fresh." He's encouraged to push the LS-78 to its highest productive peak!

Full-Function Design tailors LS-78 to your job!

An independent power flow for each machine function . . . bridges all restrictions of non-independent power trains. It offers more exclusive standard features, a wider choice of optional features that can be operated *simultaneously* without restricting *any other* function. Factory or field-install function-adding features you need anytime . . . today, tomorrow, next year. LS-78

For details and fact-finding catalog write: Link-Belt Speeder Corp., Cedar Rapids, Iowa

LINK-BELT SPEEDER



21 crawlers | 6 truck-cranes | 4 self-propelled

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Amvit VITRIFIED CLAY LINER PLATES

protect concrete structures from disintegration

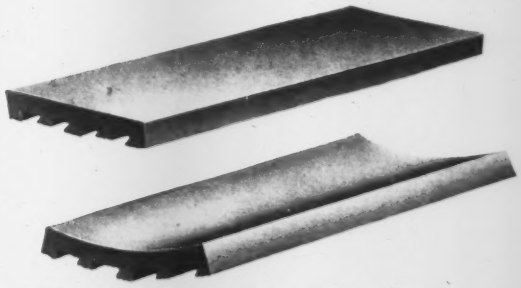
CLAY LINER PLATES ARE UNAFFECTED BY EROSION, ABRASION OR CORROSIVE ACIDS OR GASES

For complete protection of concrete pipe sewers, industrial sewers, acid vats, sewage treatment tanks, neutralizing baths, culverts, retaining walls, and bridges use Amvit clay liner plates for these five big reasons:

1. RESISTS ACID ATTACK — Amvit Liner plates are specially manufactured to meet all application requirements which entail resistance to acids, alkalies, and chemical reaction. They are made of the same high grade clays that go into famous Amvit sewer pipe. They are formed, dried, and vitrified to obtain clay pipe density and hardness.

2. PREVENTS ABRASION — Amvit Liner plates are not affected by the wearing action of sand, rocks, gravel, or other solids often encountered in streams and rivers. They protect all surfaces against corrosion and abrasion.

3. EASY INSTALLATION — Amvit Clay Liner Plates, hardened, glazed, and durable, permanently bond and lock to masonry and concrete work. They are easily installed on concrete forms and are sized according to standardized specifications for uniform spacing.



4. SIZES FOR EVERY JOB — To meet the applications of liner plates in industry, sewerage, and drainage, they are manufactured flat or curved, in 24-inch lengths, 9 inches wide. Lengths under 24 inches for special applications are available on request.

STANDARDS FOR CURVED LINER PLATES

Diameter Sewer	Pieces Required For Circle	Radius	Diameter Sewer	Pieces Required For Circle	Radius
Inches	Number	Inches	Inches	Number	Inches
24	8	12	69	23	33
27	9	13½	72	24	33
30	10	16½	78	26	45
33	11	16½	84	28	45
36	12	18	90	30	45
39	13	21	96	32	45
42	14	21	102	34	45
45	15	21	108	36	60
48	16	24	114	38	60
51	17	26¼	120	40	60
54	18	26¼	126	42	60
57	19	26¼	132	44	60
60	20	33	138	46	60
63	21	33	144	48	72
66	22	33			

5. LOW COST "LIFE INSURANCE" — Building Amvit Liner Plates into the original structure assures a reduction in maintenance and an increase in life expectancy far beyond the cost of liner plate protection.

For your next job, specify *Amvit Clay Liner Plates* by brand. Your local concrete pipe manufacturer can obtain them on short notice.

For more information, write or call for our detailed booklet on Amvit Liner Plates. American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

SINCE 1848

AMERICAN

American Vitrified Products Company

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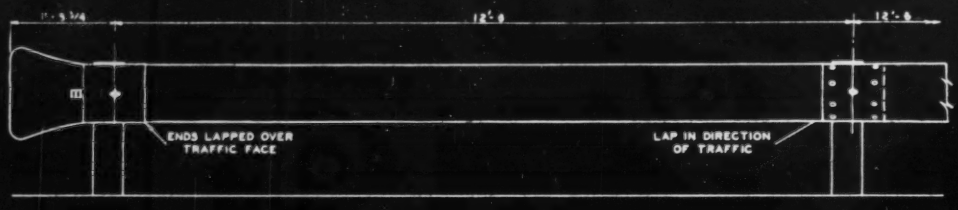
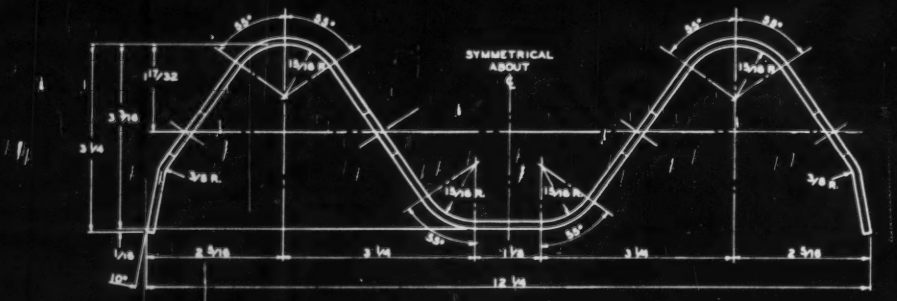
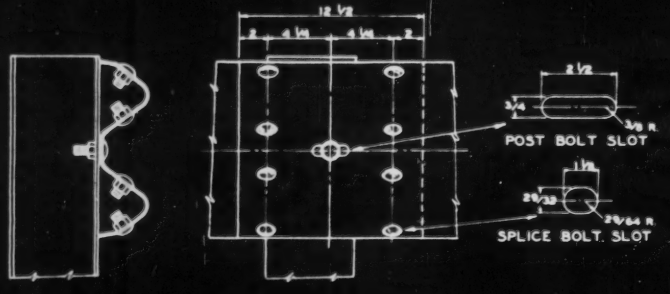
NEW ALCOA ALUMINUM BEAM GUARD RAIL ENDS MAINTENANCE



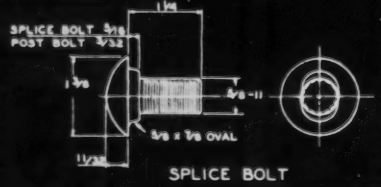
TYPICAL ELEVATION



RAIL ELEMENT SECTION

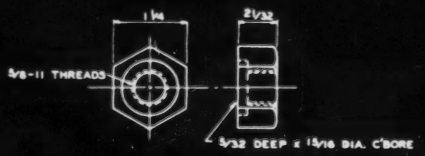


RAIL SPLICE DETAILS



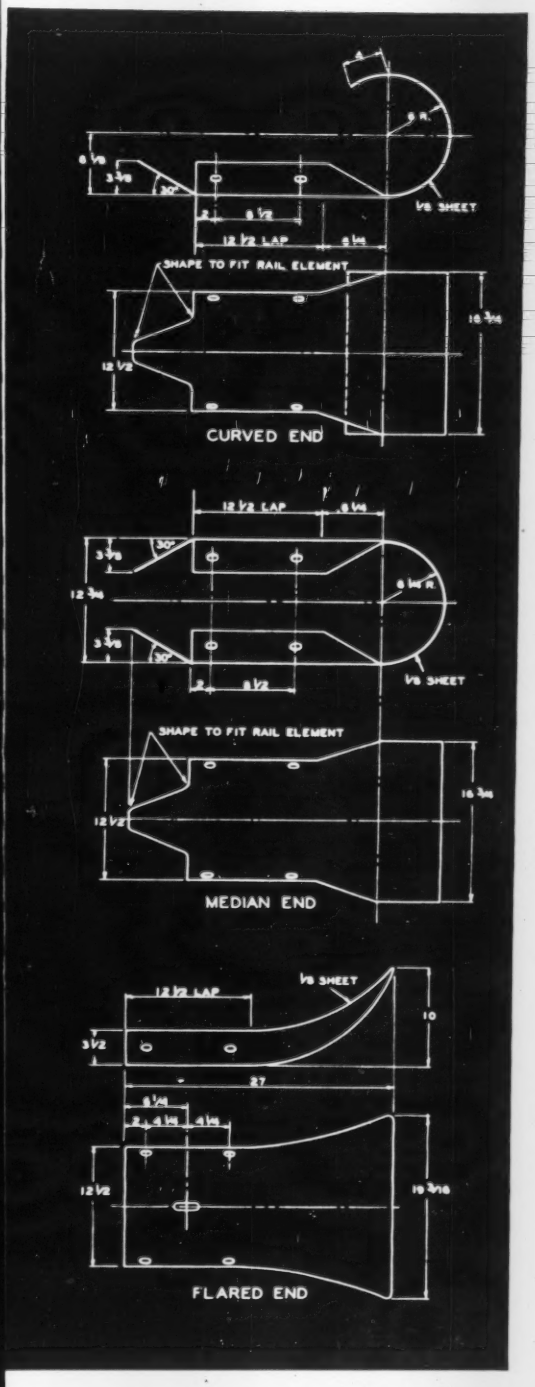
SPLICE BOLT

POST BOLT (SAME EXCEPT FOR LENGTH)



HEXAGON NUT

The story's in the "specs"



General. Alcoa® Aluminum Beam Guard Rail shall consist of rail elements fabricated to develop continuous beam strength and shall be installed as shown on the plans.

Description. The rail element shall consist of aluminum sheet formed into a beam not less than 12 in. wide and 3 in. deep, in accordance with the standard drawing. The cross section shall consist of two corrugations symmetrical about the horizontal axis, with the rounded faces turned toward traffic and the edges turned away from traffic. The edges and the center of the rail shall contact each post. Splices shall be bolted and lapped not less than 12½ in. Each end of every installation shall be fitted with a terminal section as shown on the standard drawing.

Material. The rail elements shall be formed from aluminum alloy Alclad 2024-T3 sheet (ASTM Specification B209, latest issue, alloy clad CG42A, condition T3). The terminal sections shall be formed from aluminum alloy Alclad 2024-O sheet (ASTM Specification B209, latest issue, alloy clad CG42A, condition O). All bolts shall be aluminum alloy 2024-T4 with 204 Alumilite® finish. The bolts shall be made from rod conforming to ASTM Specification B211, latest issue, alloy CG42A, and shall be supplied in the T4 temper. Bolt head and thread dimensions shall conform to the standard drawing.

All nuts shall be aluminum alloy 6061-T6 made from rod conforming to ASTM Specification B211, latest issue, alloy GS11A, condition T6. Nut and thread dimensions shall conform to the standard drawing.

Strength. The rail element shall be designed to meet the requirements of the following table. The post connection shall withstand a 5,000-lb side pull in either direction.

®Trade Name of Aluminum Company of America

Nominal Thickness in.	Minimum Tensile Strength of Joint lb	Beam Strength†			
		Traffic Side Up		Traffic Side Down	
		Load, lb	Max Deflection in.	Load, lb	Max Deflection in.
0.105	65,000	1,200	3½	1,000	3½
		1,800	5½	1,400	5½
0.125	80,000	1,500	3½	1,200	3½
		2,000	5½	1,600	5½
0.156	100,000	2,000	4	1,600	4
		3,000	6	2,400	6

†With the rail element freely supported on a 12-ft 0-in. clear span and the load applied through a 3-in. flat surface at the center of the span.

Interchangeable Parts. Guard rail parts furnished under this specification shall be interchangeable with similar parts, regardless of the source or manufacturer.

Inspection. Guard rail parts shall be inspected to determine that the material dimensions and workmanship are in accordance with the standard drawing and this specification.

Installation. Posts shall be spaced on 12-ft 6-in. centers measured along the center line of the rail. The rail elements shall be lapped in the direction of traffic. When designated on the plans, the rail elements shall be curved before erection. Holes for special details may be field-drilled or punched, when approved by the engineer. Terminal sections shall be attached to the ends of each installation and shall be lapped on the face of the rail.

Painting. No painting of the aluminum guard rail elements, end sections or fasteners will be required.

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Alcoa Building, Pittsburgh 19, Pa.

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Firm _____

Address _____

City _____ Zone _____ State _____

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2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.

A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

•

Member of Concrete Reinforcing Steel Institute

•

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A Life Line for School Fires

SIR—I have followed with much interest and wish to commend you for your attention to school fires.

I am a construction management engineer and I find that safety is an important phase of the construction industry. We are continually planning ahead, conditioning our thoughts to develop safe working practices and safe working conditions.

The Chicago school fire has brought to my mind that I have never heard of a fire drill that included the assumption of being trapped in a room. Have you heard of such a drill? During my school days it was always taken for granted that we could and would reach the fire escape.

I do not recommend that youngsters be drilled in jumping out second or third story windows, but it would appear that a rope or two of clothing could have done a lot in Chicago and perhaps fire drills and exercises should some way include such improvisations. And how much good may have come from a truck or even a passenger vehicle under those windows to reduce the height for the frightened youngsters?

WILLIAM H. CREISER
Pres., Junior High School P.T.A.
Huron, S. D.

SIR—Mr. Steiner of the Fire Protection Department of Underwriters Laboratories, Inc., points out in his letter (ENR, Mar. 12, p. 12) that the subject of fire protection did not constitute a topic of discussion at the Fourth National Construction Industry Conference which was held in Chicago in December. He is quite right.

But he failed to point out that topics similarly omitted from discussion were the use of steel, timber, reinforced plastics and lightweight metals; an environment free from radioactive fallout and dust; tolerable noise levels in buildings; the use of color in work and metropolitan centers; and so on.

I maintain a complete file of correspondence from individuals and organizations throughout the entire United States who rush forward with suggestions for topics, most of which are vital and timely, to be included in our National Construction Industry Conference as soon as the early program notices go out.

However, a two-day conference can give adequate attention to only a limited number of topics. In our future conference we hope to be able to get around to all the topics that warrant extended discussion, and certainly we hope that in the coming years we shall be able to devote to fire protection and safety the time they deserve.

D. B. SINGER, PROGRAM CHAIRMAN
Fourth National Construction Industry Conference

SIR—Thank you for your very comprehensive and informative article "School Fires: What Must Be Done." (ENR Jan. 22, p. 21).

Articles such as yours will greatly aid the Fire Service in their education and enforcement of fire safety to the School Authorities and the public.

DEON B. BOWEN
Deputy State Fire Marshal
Riverside, Calif.

Multiple Contracts

SIR—This letter has reference to the letter from Ervin L. Lazere of New York City (ENR Apr. 9, p. 9). While Mr. Lazere has offered some very interesting comments on the economics of the construction industry, it appears he is not fully informed with regard to the multiple contract process.

The office with which I am associated has the responsibility of controlling design, contracting, and construction of public buildings in North Carolina.

In 1925 the State of North Carolina adopted a separate contract law requiring that separate bids be submitted on all public work within the state structure for general, plumbing, heating, and electrical contracts. During the years since 1925 this law has been strengthened and is still in successful operation.

No system would be so perfect as to please and satisfy all persons concerned; however, it is evident that this system has successfully operated for more than thirty years with the apparent result of encouraging the free enterprise of which Mr. Lazere speaks as well as in a healthy atmosphere in the construction industry in North Carolina.

The various trade organizations representing the construction industry not only require ethical practices on the part of their own members, but intercoordinate high ethical standards applying to the industry as a whole. The end result appears to be an excellent service to the public and prosperity to the contractors who can stay in business only if they make a profit.

R. G. BOURNE
Consulting Engineer
Property Control and Construction Div.
State Dept. of Administration, N. C.

(Reader Comment continued p. 14)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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—Waldo G. Bowman, Editor, Engineering News Record, December 25, 1958.

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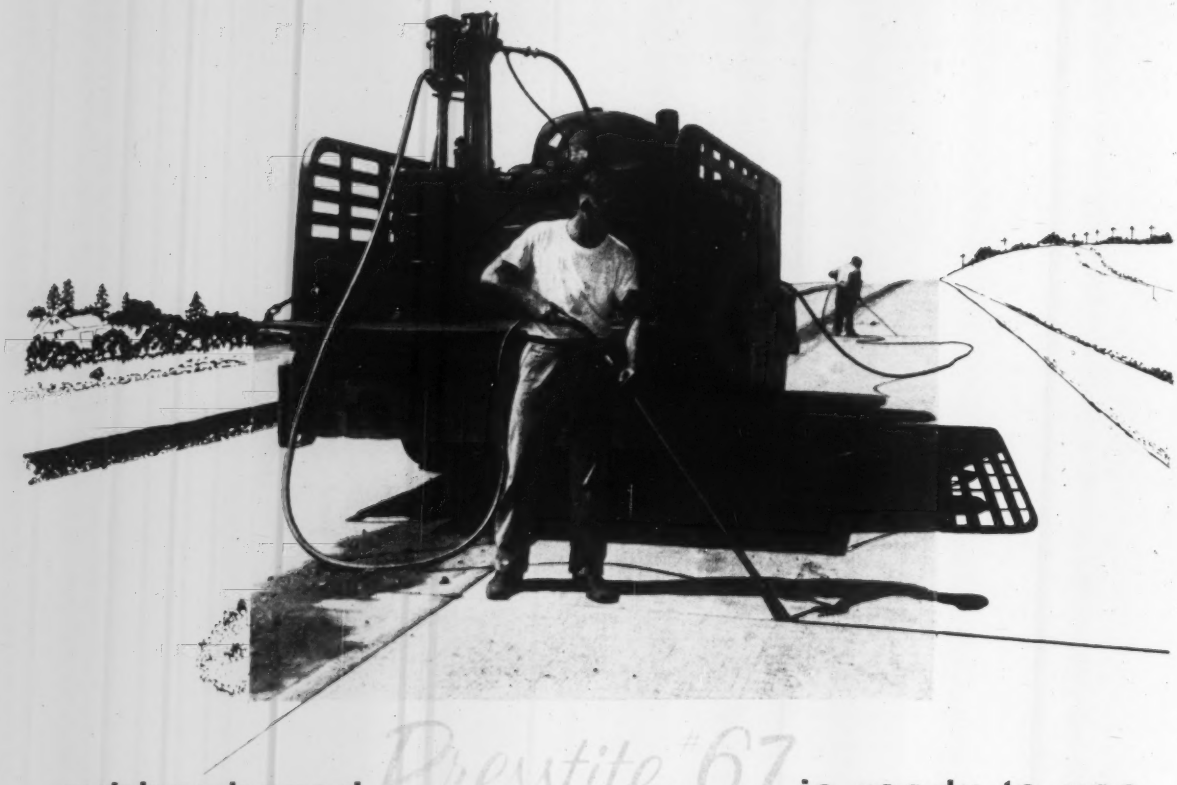

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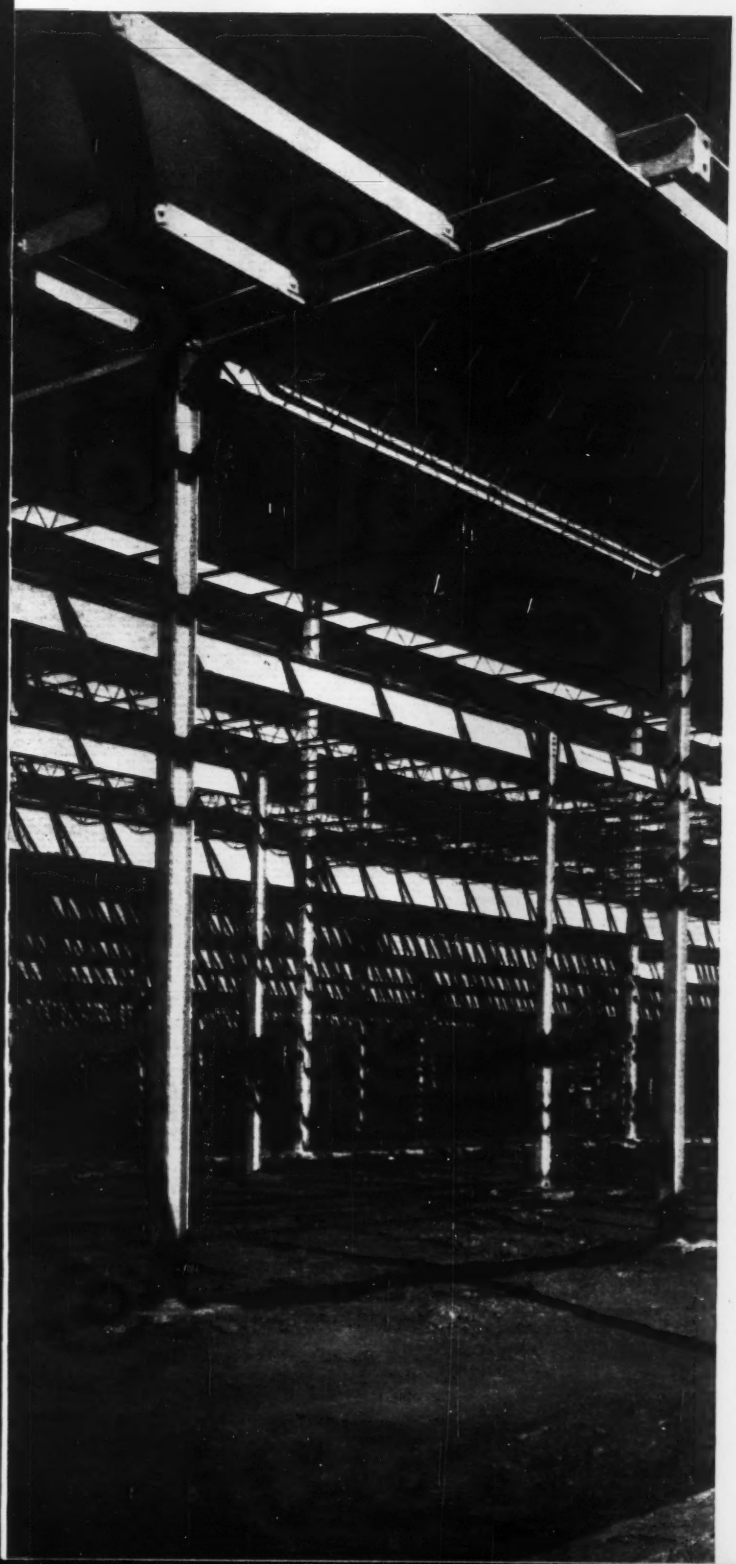

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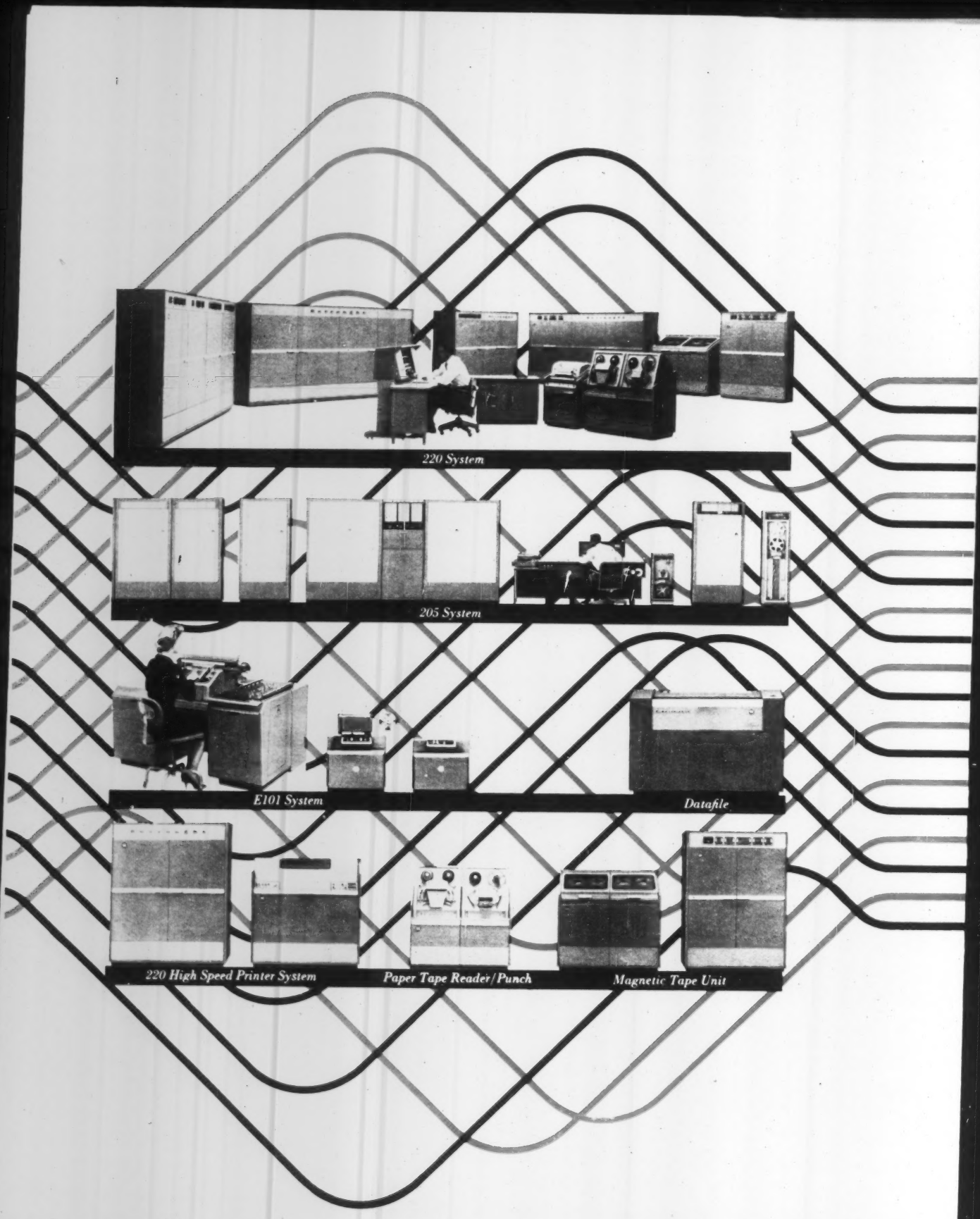
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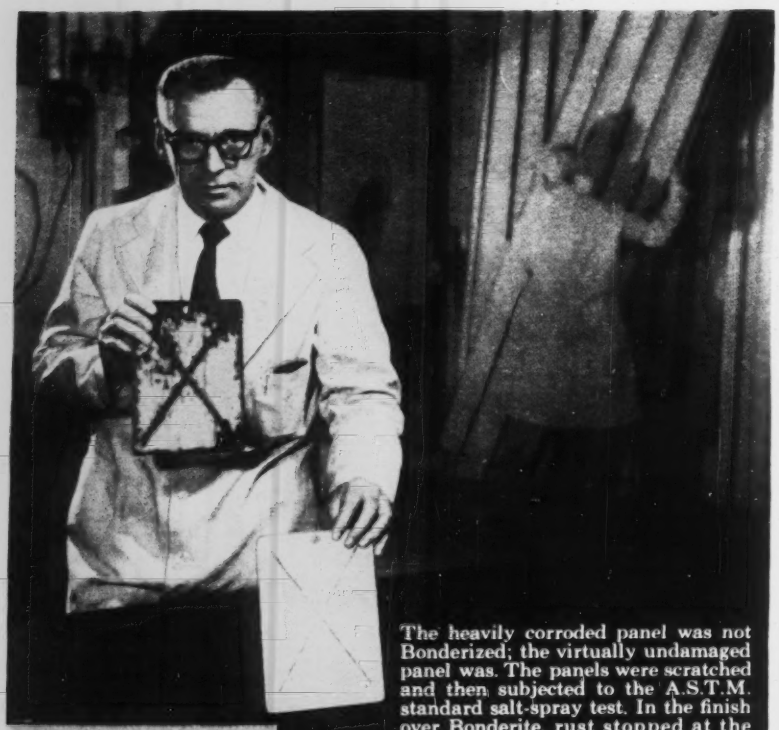

The heavily corroded panel was not Bonderized; the virtually undamaged panel was. The panels were scratched and then subjected to the A.S.T.M. standard salt-spray test. In the finish over Bonderite, rust stopped at the scratch-mark — but it spread extensively over the other panel.

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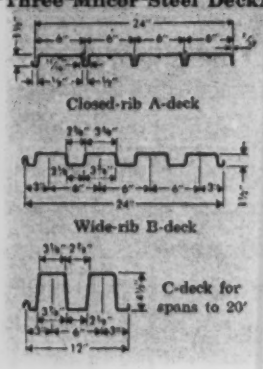

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. . . Reader Comment

No Indian Givers

SIR—One point seems to have been overlooked in the fight over the Tuscarora lands needed for the Niagara power pumped-storage reservoir. The Indians need their land to survive. Lacking the power of condemnation, they could not replace the lands sold to the New York State Power Authority.

Apparently no one has given serious consideration to the only solution that would be fair to both sides. The answer is to have the Power Authority buy other land adjoining the reservation and trade it to the Tuscaroras on an acre for acre basis.

That the new land might cost a little more is of no consideration. Economic evaluation and justification of the reservoir should be based on the new cost.

HARRY E. GRAHAM
Lake Jackson, Tex.

Editor's Note: The New York State Power Authority and the Tuscarora Indians did negotiate on the basis of an exchange of land. About 1,200 acres east and northeast of the reservation were to be given to the Indians in exchange for the lands taken for the reservoir. However, negotiations broke down over conditions required by the Indians. They wanted the new lands to be vested with reservation status; and exemption from state and federal taxes for the money realized on the sale of their land. The Power Authority felt it could not construct dikes on the property acquired subject to such conditions since it would not have absolute rights to the land until the conditions were fulfilled—if ever.

For Your Calendar . . .

National District Heating Association, Annual Meeting, Skytop Club, Skytop, Pa., June 1-3. Write C. E. Squires, Pgh. 15202, 8Syracuse Ave., Cleveland, Ohio.

Industrial Water Conservation Conference, University of Michigan School of Public Health, Ann Arbor, Mich., June 8-10. Write Wm. Bender, University of Michigan School of Public Health, Ann Arbor, Mich.

Southern Research Institute Conference, Birmingham, Ala., June 11-12. Write Southern Research Institute, 2000 9th Ave. South, Birmingham 5, Ala.

Symposium on Plastic Design in Steel, Queen's University at Kingston, Ont., Canada, June 15-19. Write Dr. H. W. Tiganis, Dept. of Extension, Queen's University, Kingston, Ontario.

National Society of Professional Engineers, Annual Meeting, Commodore Hotel, New York, June 17-20. Write C. E. Richie, NSPE, 2029 K St., N. W., Washington, D. C.

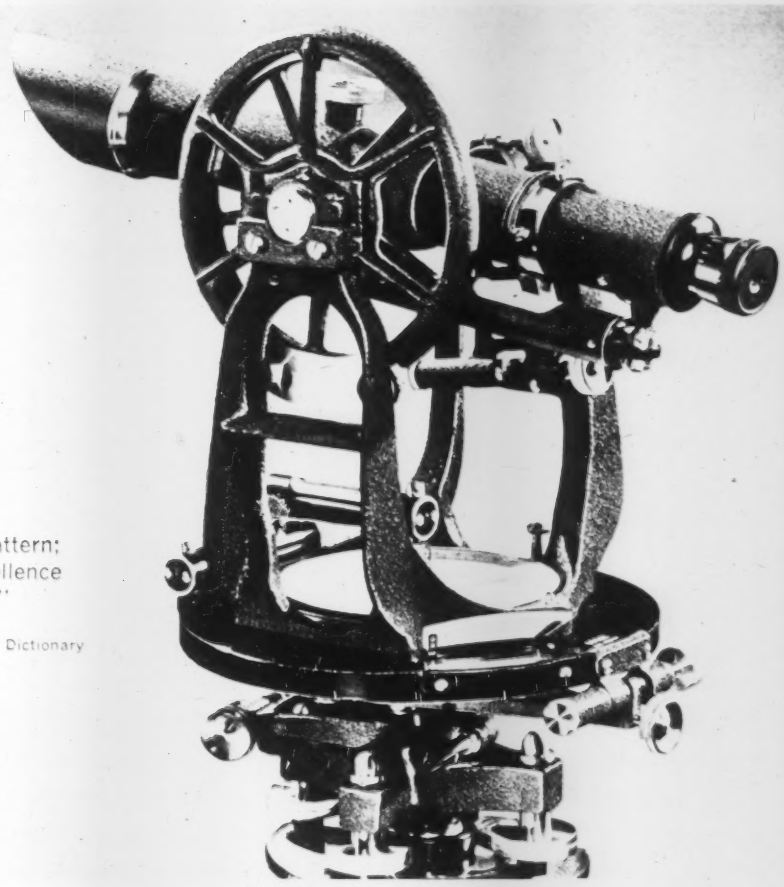
American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 21-26. Write ASTM, 1916 Race St., Philadelphia, Pa.

American Institute of Architects, Annual Meeting, Roosevelt Hotel, New Orleans, La., June 22-26.

Air Pollution Control Association, Annual Meeting, Hotel Statler, Los Angeles, Calif., June 22-26.

Asphalt Institute Mid-June Meeting, Hotel del Coronado, San Diego, Calif., June 24-25.

Waste Disposal in Marine Environment, First International Conference, University of California, Berkeley, Calif., July 29-31. Write Department of Conferences, University Extension, University of California, Berkeley 4, Calif.



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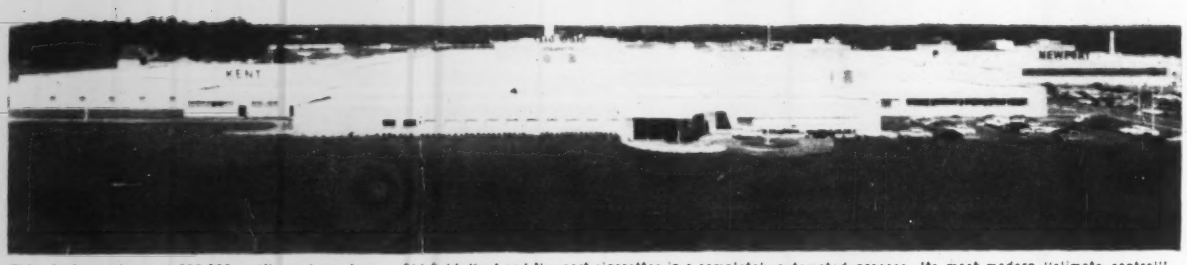

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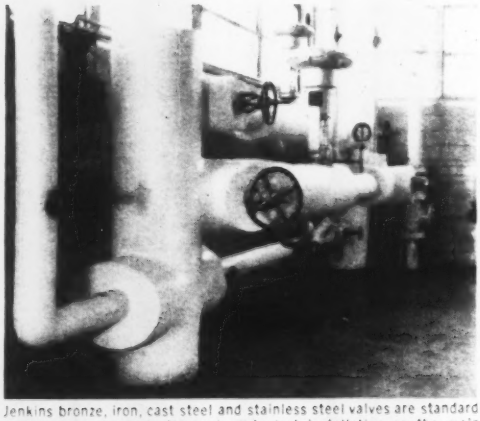

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Single issue prices will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

LONGEST SPAN GOING UP—The world's longest vertical lift span—a 558-ft, 2,000-ton structure—will be positioned in its towers next Sunday. The span is part of a single track railway bridge across the Arthur Kill between Elizabeth, N. J. and Staten Island, N. Y.

PRICE BOOSTS MADE DIFFICULT—Cement producers will find it difficult to offset higher costs by raising prices during the next three to four years. Capacity currently exceeds usage by 20%—a condition expected to exist until 1962 at least. Competitive pressures in some local areas could result in price cuts, says one official.

MERCHANDISING WATER—Philadelphia's water supply is in such good shape that the city plans to embark on an advertising campaign to increase water use. Water Commissioner Samuel Baxter will use the increased revenues to pay for recent improvements.

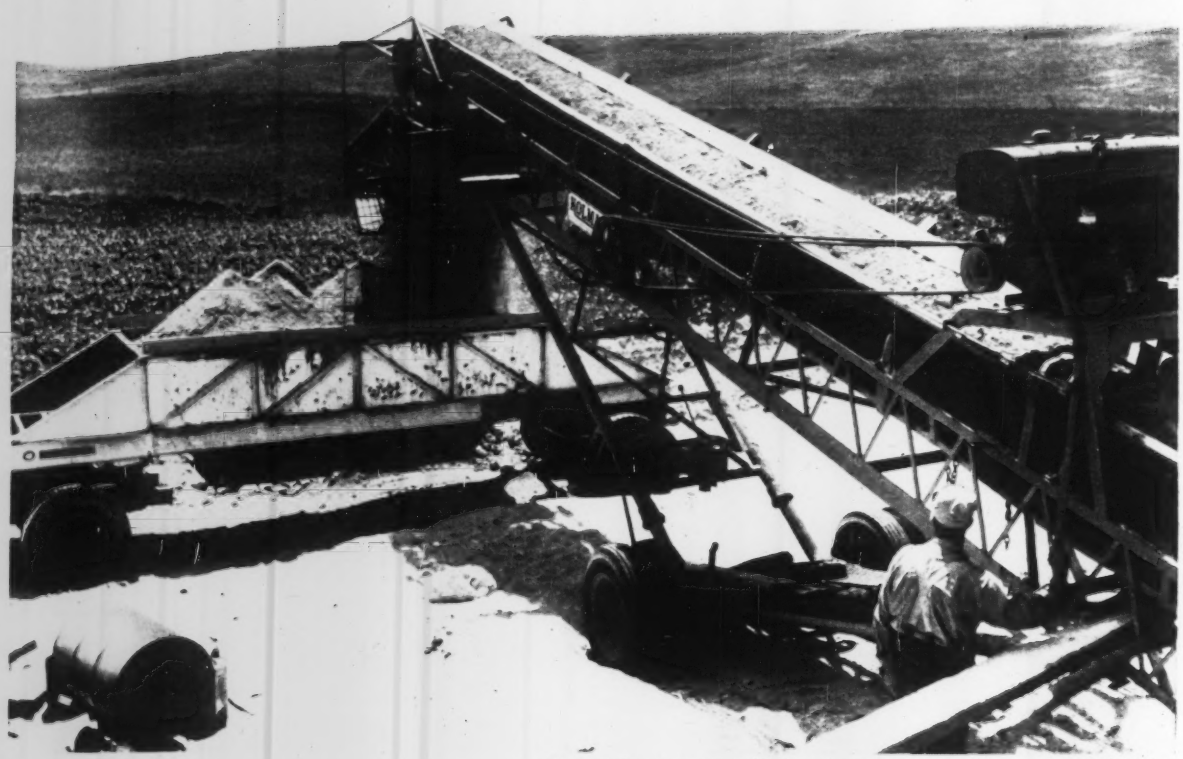
TROUBLE BREWING?—Some eastern members are urging secession from the Building Officials Conference of America because of discontent about their say in the organization. What may have been the last straw came at the annual meeting in St. Paul last week when the nominating committee's candidate for first vice president, Benjamin Saltzman, of Brooklyn, was narrowly defeated by surprise candidate, Alfred Schroeder of St. Paul. Mr. Schroeder was nominated and elected at the end of the meeting, with only about 65 members present.

TEARE WILL HEAD ASEE—Benjamin R. Teare, Jr., will be the next president of the American Society for Engineering Education. He is dean of the College of Engineering Science at Carnegie Institute of Technology, Pittsburgh. He will take office when ASEE meets in his home city June 15-19.

INTERCHANGE JAM—An unbuilt interchange is delaying $50 million worth of highway construction in Virginia. State and federal highway engineers can't agree on a design. A January 1961 start on 11.2 miles of expressway within Norfolk will be set back nearly a year because a "less expensive" design—approved by the Bureau of Public Roads—doesn't satisfy state engineers as meeting the city's 1975 needs.

HAMSTRUNG—Don't expect any great advances toward building code uniformity in the near future from the efforts of the Joint Committee on Unification of Building Codes. The committee made little progress at its meeting in St. Paul last week. The Southern Building Codes Congress did not send a representative. None of the organizations that sponsor model codes have yet adopted the code provisions on which the committee has agreed.

US RUBBER CONVEYOR BELTS



Stockpiled aggregates at crushing plant being conveyed into trucks via "U.S." Belt.

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Mr. John Wheelborg (of Wheelborg Bros., Dell Rapids, S. D.) is co-owner of a firm engaged in crushing aggregates and in chip-surfacing roads.

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WASHINGTON OBSERVER

- Democrats check atomic construction ideas
- States may control some atomic activities
- School construction: Rocky road ahead
- 'Slow Down,' Seaton tells lobbyists

● **New Democratic caution on spending has cut down the drive for atomic construction.** When the Atomic Energy Commission came in with its proposal for $115.5 million in new construction authorization early this year, Democrats labeled it "pitifully inadequate." But now it appears that the Democratic substitute will be only about $50 million more than the AEC's own program. The explanation: With business recovery, big spending is no longer such good politics.

Nine new civilian reactors would be authorized—none in the large, commercial-scale class favored by some public power Democrats. Some new ground would be broken by construction of advanced gas-cooled and nuclear superheated reactors. But the emphasis is on a moderate upgrading of established reactor types.

● **The Administration is proposing a gradual shift to state regulatory authority over atomic facilities.** A bill under consideration by the Joint Committee on Atomic Energy would allow a transfer of control to the states over certain activities—such as industrial and medical use of radioisotopes.

Jurisdiction over power reactors and other major facilities would remain with the AEC. However, the U. S. Chamber of Commerce says this area, too, should be turned over to the states when they gain sufficient experience.

Congress is studying a Democratic proposal to transfer federal regulatory functions from AEC to the Public Health Service.

● **School construction legislation faces a rocky road.** Some supporters of the Democratic program for federal aid to schools have some optimism, based on the performance of the House of Representatives during the housing bill debate and voting (see p. 81). Democrats generally stuck together behind Speaker Sam Rayburn.

But there is a difference. Representative Rayburn pulled out the stops in the housing debate and probably reached a peak of support from southern conservative members. Enough Southerners rejected the modest amendment of their colleague, Rep. Syd Herlong (D., Fla.), to save the Rains bill.

On schools, Speaker Rayburn will lose most of the Southern bloc—because of the integration issue. The Senate will probably delay any action on schools this year, even if the House approves the $1.5-billion aid bill reported by its Education and Labor Committee.

● **Interior Secretary Fred Seaton has told reclamation lobbyists they aren't helping things by trying to "lengthen the list" of federal projects when the money isn't available.** "Starting projects without a reasonable expectation that there will be enough money to complete them efficiently and expeditiously can only result in costly construction stretchouts . . .," he said.

Here are a few of the projects Mr. Seaton wants to delay: Yellowtail Dam, a high-arch project in Montana, and several other Missouri River Basin projects; Curecanti Dam and other lesser Upper Colorado River units; and federal development of the Trinity River project in California. Mr. Seaton urges private partnership development of the Trinity project.

Barber-Greene Model 879-B—the universal finisher for any size job—shown paving street for housing development. Write for information on this famous finisher.

The asphalt finisher for all jobs large or small

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States Step Up Control of Building

- **But it's not always for the better. ENR survey shows state codes sometimes just add to the confusion growing out of a variety of local laws.**
- **Generally, however, states with a code are better off than those without. This is especially true when the code is made mandatory.**

State control over building design and construction has increased substantially over the last 15 years but not necessarily for the better.

In many cases, state requirements have added to the confusion resulting from the multiplicity of local laws without necessarily improving public safety, health or welfare.

But where compliance with state building codes has been made mandatory, public health, safety and welfare are protected at minimum cost.

These are the conclusions drawn from an ENR survey aimed at determining the current status of state building codes.

Although some states that didn't have codes at the end of World War II now have them and some states that did have codes now have more regulations, the muddle that existed then exists still.

The degree of state control today varies from jurisdiction only over state buildings to complete control of all buildings. Some states cover just places of public gathering—schools, hotels, theaters, etc. Others have good, detailed codes—but don't require that communities adopt them. And in some cases, state codes are simply basic minimums on which localities may expand or not, as they choose.

From inadequate or nonexistent building codes have grown complaints of "irresponsible design," "high maintenance costs," "flourishing fly-by-night builders," and the like.

In 1945 a drive for early enactment of state codes got under way. It was motivated by a desire to eliminate substandard temporary housing remaining after the war and to prevent jerrybuilding in areas without legal safeguards.

But there was another important selling point, as far as the construction industry was concerned. State codes—especially statewide standardization of regulations—tend to lower building construction costs.

Sixteen states now report they have comprehensive state codes. They are Alabama, Connecticut, Indiana, Maryland, Michigan, Massachusetts, Nevada, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Vermont and Wisconsin.

In each of these states, however, the phrase "comprehensive state code" has a different meaning. For example, the Administrative Council of Indiana has the power to promulgate and administer building rules and regulations, while in Massachusetts and New York, communities may decide whether or not to adopt the state code.

And in nearly all states—including these 16—many different state and local agencies are in the building regulation act in one way or another. Plans for new construction must be submitted to several agencies, more administrators and staff are required to promulgate, inspect and enforce rules, fees may have to be paid to a multiplicity of state and local agencies, and the project must be inspected by the representatives of these agencies. In most states, the health department, education department, labor department and the fire marshal, at the very least, have some jurisdiction over building, in addition to the state building commission, if one exists.

The result is often confusion and sometimes great waste of money and duplication of effort.

Beyond the cost, the splitting of authority among many different governmental departments has a greater danger: the sometimes unwarranted assumption that approval of building plans by one agency means that the design is safe.

Actually, in most cases, each agency investigates only a few aspects of the design. In New York State, for example, the Labor Department checks plans for new factories. Its approval may indicate only that there are sufficient toilet facilities, not that the design meets the state building code.

Generally, however, even a state code that doesn't work as well as it might is better than no code at all. Of the 32 codeless states, only five report satisfaction with their condition. Many of them have adopted stop-gap measures.

Authorities in each of the states with a code point out at least these advantages:

- It improves the quality of buildings by giving architects and engineers design standards.
- It increases the safety of new home buyers and construction workers.
- It reduces fire hazards.
- It lowers construction costs.
- It establishes standards of quality, durability and service.
- It simplifies administration and regulation of design and construction.

If progress in adopting state codes is slow, it is at least continuing. Minnesota is preparing a code to put before the 1961 legislature. Missouri hopes to adopt a code in about two years. Illinois is working on one. Massachusetts is revising its code to cover all types of construction.

One reason for the sparcity of state codes may be that "the need for a code was not recognized until recently, when the rapid growth of population and construction made it apparent," says Otto H. Hall, Chief of Public Works, Colorado State Planning Division.

Another is that some officials do not consider state codes practicable—too difficult to enforce, they say.

Pressure groups are also among the obstacles.

One code authority recommends placing the problem in the hands of the Council of State Governors. It would be asked to develop a code that each state could adopt, looking to the day when there is not only a uniform code in each state, but regional or even national uniformity.

FAA Will Halt Runaway Runways

- **Agency says jet planes must be built to fit airports; 10,500 ft is considered long enough for runways.**
- **Airport planners report they're caught between the airlines and airport operators.**

Airport runway lengths may have gone about as far as they may go.

Federal Aviation Agency has not yet laid down official policy, but agency executives told ENR that from now on jet planes will have to be built to fit existing airports. The seemingly endless growth of runways will have to stop.

FAA will refuse to give federal aid to runways that go longer than 10,500 ft or so. They will even pressure manufacturers with the weapon of certification to keep the size of planes down, to require more power in the engines, and to equip planes with aids that will permit them to fly in and out of existing runways.

Gen. E. R. Quesada, FAA Administrator, believes that the airport standards of a year ago, set for available jets, are the optimum. The FAA conclusion is that the airports can't "give" anymore. It's time for the planes to "give."

The jet as it was first being designed would have been capable of going in and out of existing airports. But the manufacturers were put under pressure from the airlines to build the planes bigger and bigger to get added payload.

Now new airports have to be built and extensions are being made at existing airports. Costs of airports threaten to exceed the bounds of economic operation, according to FAA.

General Quesada has ordered extensive studies to be made of technical developments that will permit new planes to land and take off at present airports. The agency is beginning to urge airplane manufacturers to design such developments into their planes.

Aviation experts say that the supersonic jet transports now on the drawing boards will be so well powered and equipped that they will not need longer runways.

The steady increase in runway lengths that has existed so far was the subject of much discussion last week at the second Jet Airport Conference of the American Society of Civil Engineers Air Transport Division in Houston, Tex.

"We like to think that continuation of runway length is not going on forever," says E. Thomas Burnard, executive vice president of the Airport Operators Council.

Mr. Burnard reported that the council has been reassured to some extent on the runway situation by the FAA and the Senate Interstate and Foreign Commerce Committee's report on the Federal Airports Act.

Airport planners at the conference found themselves caught between airlines and airport operators.

"The way passengers have been treated (at airports) is an insult to the dignity of the human race," says Richard Huber, of Ammann & Whitney, New York City consultants retained for the Chantilly project, Washington, D. C.'s international airport. The statement followed complaints that the speed, comfort and safety of jet airliners are inconsistent with the ground facilities.

"Ground facilities at the real centers of airline operations have lagged so much that they are scarcely adequate for present-day situations," says Charles S. Draper, head of the Department of Aeronautics and Astronautics at Massachusetts Institute of Technology.

"They will surely not be able to satisfy the requirements of either the near or the far future," he adds. "The imminent displacement of these (existing) aircraft will certainly make matters worse.

"Preserve the concept of complete devotion to passengers," he urges.

Airlines representatives, describing recent use of ground facilities available for jet operations, said that taxi-in, taxi-out operations were preferable to taxi-in, tow-out systems.

They claimed that ground times in some cases were made excessive by airport requirements for towing out in the absence of blast fences. They said that gate positions, with blast fences separating them are not big enough for airlines using conventional loading and unloading systems.

House Unit OKs Interstate Bill

The House Public Works Committee last week approved the Fallon bill, which is designed to keep the Interstate Highway Program running at full pace.

The bill calls for:

- Suspending further the Byrd pay-as-you-go amendment for fiscal 1961 and 1962 allocations. It had been suspended for 1960's allocations, made last summer.
- Authorizing the 1958 cost estimates for completing the Interstate System as the basis for apportioning 1961 and 1962 money.
- Increasing the 1961 and 1962 apportionments each from $2.2 billion to $2.5 billion, as was done for 1960.
- Including the full 41,000 miles of Interstate roads in the cost estimates due in 1961 from the Bureau of Public Roads. (The 1958 estimates included a little over 38,500 miles.)
- Exempting roads through incorporated municipalities from the federal billboard ban.

The tax-writing House Ways and Means Committee now has the measure. It is expected to act within the next couple of weeks.

The committee will be considering the alternatives for solving the financing problem (ENR May 14, p. 25).

Old Airport Will Be a Seaport

Baltimore's old Harbor Field Airport will become a deepwater terminal for ocean vessels, as a result of a real estate transaction between the Baltimore Airport Board and the new Maryland Port Authority. It could result in $25 million worth of new construction.

The Airport Board sold the 324-acre airport site, on the eastern edge of Baltimore Harbor, to the authority for $4.1 million. The authority will spend about $2 million to transform Harbor Field into a seaport. The Airport Board plans to spend the money received for the land to expand Baltimore's Friendship International Airport.

When Friendship Airport opened, Harbor Field facilities were leased to operators of private and small commercial aircraft, and tenants outside the aviation field. The landing facilities have now been discontinued.

The Airport Board will spend $3 million of the $4.1-million sale price to add a new wing to the terminal at Friendship International Airport. The new wing, and an improved taxiway system, are planned for an expected increase in jet traffic. The remaining $1.1 million will be used to match federal-aid funds for a $10-million airport expansion program. So far, the Airport Board has only received $1 million from the Port Authority.

Coming: Brighter Lighting in Buildings

- **Higher lighting levels increase productivity and cut accidents, absenteeism, BRI conference hears.**
- **But higher levels bring problems: glare, monotony, shadows and color must be controlled.**

Lighting experts last week predicted the public will adopt the higher illumination levels recently recommended by the Illuminating Engineering Society. Brighter lighting, they said, will have wide-range effects on building economics and architecture.

They made these predictions at a Building Research Institute conference on building illumination in Cleveland.

"The new IES recommendations are based on studies made by Prof. H. Richard Blackwell, director, Institute for Research in Vision, Ohio State University (ENR June 19, 1958, p. 115).

IES made substantial changes in its existing recommendations for foot-candles of lighting for various tasks. For example, it jumped lighting for stenography from 50 ftc to 100; for detailed work in drafting from 50 to 200 ftc; for reading penciled handwork in schools from 30 to 70 ftc; for inspection of cloth from 500 to 2,000 ftc and for extra fine machine shop work from 200 to 1,000 ftc (ENR Nov. 20, 1958, p. 57).

• **Pay off**—C. L. Crouch, technical director of the IES, described three experiences with the new high levels.

• Douglas Aircraft installed 400 ftc for assembly of electronic components. The value of these components varied between $100 and $10,000 each. The rejects dropped from 28 to three, with an average saving of $2,500 per day. Migraine headaches dropped from four to zero, and absenteeism was reduced to nothing.

• The Helipot Corp. installed 200 ftc in an assembly shop dealing with very small parts. An independent analyst determined the results over a three-week period. There was a 16% increase in output, a 28% decrease in rejects, an 11% decrease in lost time due to accidents. The cost of installation was paid off by the savings in eight months' time.

• The Erickson Tool Co. is going to 200 ftc for the general area and 500 ftc for the difficult-seeing area. It increased output 10% and paid off the installation in three months. Additional benefits included a 20% decrease in rejects and 50% decrease in minor accidents.

• **New responsibilities**—But it is not enough merely to provide more foot-candles. "Now as never in the past," Mr. Crouch said, "we must engineer the whole luminous interior into a smooth integrated effect of a pleasing, well lighted interior. There must be no high brightnesses toward the eye. There must be no overly light or dark areas; there must be a blending in the whole field of view. There must be a pleasing use of color, with accents and change of pace. There must be an avoidance of monotony in lines and patterns . . ."

Research is being carried out to find the solutions to problems created by the new lighting levels, Mr. Crouch went on. Cornell University is trying to determine how bright large window areas and luminous areas of electric lighting can be. The University of Rochester is finding out how much change in lighting one can have when looking from one part of a room to another.

The University of Texas is determining suitable color combinations for pleasing and stimulating interiors. The University of California and the Toronto Board of Education are determining losses in contrast due to reflections of overhead lighting equipment in pencil work and printed material.

• **Some dissension**—Not all the experts were in agreement on adoption of the new recommendations. Robert V. Neum, chief electrical engineer, Sargent Webster-Crenshaw & Folley, Syracuse, gave these words of advice:

"We must by all means avoid uninformed overselling of higher levels of illumination. We cannot expect that all of our clients are going to be able and willing to install 100 ftc just because the handbook says so. The need may not exist in terms of a client's specific situation, and he may not be able to pay the cost . . .

"In the cases where the higher levels are indicated, the evaluation of cost must be made in terms of proper design for brightness control and for the best operation of the equipment. This has been specifically pointed out by reputable manufacturers and is well known by capable engineers, but there are going to be many cases of irresponsible attempts to sell higher level by putting very high output lamps and ballasts into the chassis of a standard luminaire, with excessive brightnesses and other operating difficulties. Proper design of equipment and installation are prime conditions of the attainment of higher levels."

• **Trends**—The recommended lighting levels, while ahead of general practice, are only level with, and in some cases behind, current advanced practice, contended Henry L. Logan, vice president for research, Holophane Co., New York City.

"Since today's advanced practice is the current practice of tomorrow, I expect the new lighting levels to come into general use in due time," he said.

A widespread application of higher lighting levels will undoubtedly be accompanied by changes in light sources, lighting equipment and application methods, he predicted, but nothing necessarily revolutionary.

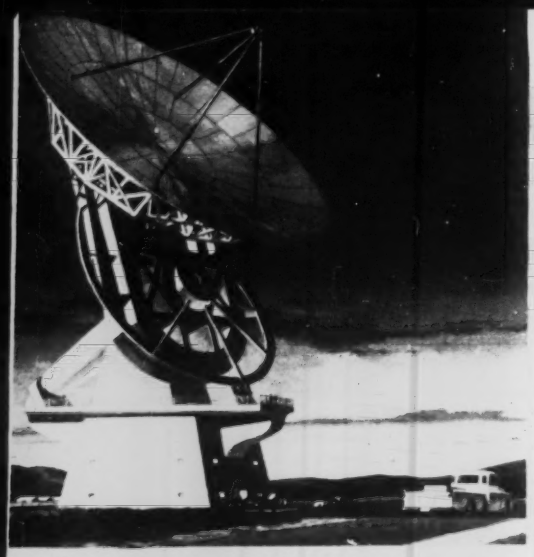
• **Air-conditioning load up**—Higher lighting levels will also affect air-conditioning and heating practice. Mr. Logan observed. "If the wattage consumed by lighting units ends up as usable BTUs of heat input. A 125-ftc incandescent or a 600-ftc fluorescent installation is practically a complete heating system.

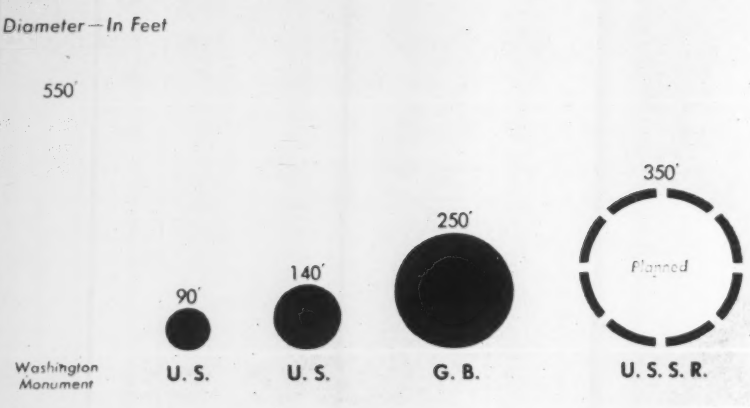
"Methods will be developed," he predicted, "to save on central heating, where climate permits, by using the heat by-product from good lighting jobs. This will help to make higher levels cost less."

Edward V. Benesch, chief engineer, Syska & Hennessy, Inc., New York City, detailed the effects on air-conditioning costs of higher lighting levels.

He found that refrigeration tonnage increased with increase in foot-candles, but not as rapidly. But too many air changes were required for comfort in the higher lighting levels, also too much air supply. This required large ducts, making the air-conditioning system even more costly than the increase in refrigeration tonnage alone indicated.

Mr. Benesch suggested some ways of reducing air-conditioning costs due to lighting, in addition to the obvious one of developing and using more efficient lighting equipment. One way is to use ventilated luminaires; the heat is carried away from the lamps as soon as it is created. Another way is to use panel cooling in connection with air-conditioning. The "cooled" ceiling panels reduce the quantities of air needed and permit use of smaller ducts.





Radio telescopes (like this) are growing in size and power. The latest will stand as tall as the

Lifting the Veil on the World's Biggest

An unusual construction project is under way on an Allegheny mountain top 150 miles from Washington.

It's the military's newest and hottest space device—a radio telescope that dwarfs anything else in the free world. And, according to hints from the brass, it may be about twice as big as any the Russians have (see above).

Ostensibly, the $79 million telescope being built near the tiny town of Sugar Grove, W. Va., is designed to probe many, many times farther out into space than is permitted by present telescopes—either optical or radio.

Officials privately admit that the telescope may be used off and on to probe the universe—but its main function is as a defense tool. They won't say whether its main uses are for communications with satellites, for a new breakthrough in radar surveillance or for a combination of several such purposes. But it is admitted the "Naval Radio Research Station" will be able to bounce radio signals off the moon and man-made satellites for communications and navigational uses, and possibly do some satellite tracking.

One thing is certain. The huge new installation—a moving monster of concrete, open steel work, electric power and electronics—is a key military weapon of practical use in keeping us up with the Soviet Union in the age of missiles and satellites. It's due to go into service in 1962.

No one will say yet whether the new telescope will look much like smaller models under construction or already built. But its massiveness indicates that the problems of design, fabrication and construction are of a higher order.

The 20,000-ton "dish" has to rotate in both a horizontal and vertical plane, like an optical telescope. It is an aluminum-lined, saucer-shaped lattice-work of steel members. Its circular dish will be 500 ft to 600 ft in diameter.

The actual construction of the telescope breaks down like this in dollars and cents:

- $38 million for engineering and construction of the radio telescope.
- $6 million for development and procurement of electronic instrumentation.
- $7.8 million for support facilities, such as living quarters, work shops, etc.
- $160,000 for purchasing 1,800 acres of land.

The balance of the $79 million is spread among fringe costs and road building.

Last September the Navy named a three-firm team (Tidewater Construction Corp. of Norfolk, Peter Kiewit Sons of Omaha, and Patterson-Emerson-Comstock Inc. of Pittsburgh) as prime contractor for the $38-million construction job.

The Navy sifted through some 125 firms before a prime contractor was chosen.

The designer is Grad Urbahn & Seelye, of New York City, which has been working on the project for more than two years under a $3-million contract. Ammann & Whitney, New York City, are the consulting engineers.

Here's where the job stands now:

- Clearing and grading of the Sugar Grove site has been completed by the Nello L. Teer Co. of Durham, N. C., under subcontract. The company moved 1,534,000 cu yd of dirt, including a 35-ft knoll, without blasting. (The Navy didn't want to disturb the shale foundation.)
- Work has started on placing concrete footings for the telescope. Baker and Coombs of Morgantown, W. Va., is doing the job. It will take around 110,000 cu yd of concrete.
- U. S. Steel's American Bridge Division has a $19.3-million contract to build the 600-ft-dia radar dish and its supporting structure. First shipments of steel are expected to move to the construction site by late June. Some 25,000 tons of steel will go into the structure. Over 20,000 tons will be used in the telescope's circular dish.

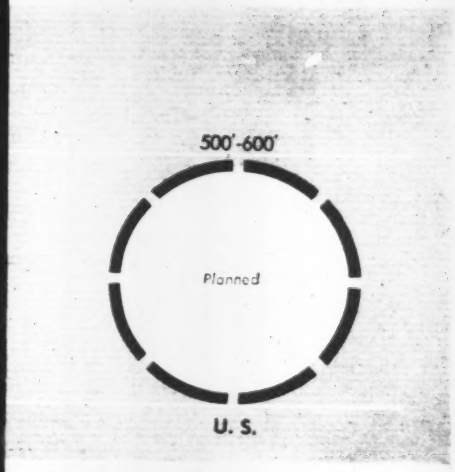
Although the Navy won't release details of how the mammoth steel structures is to be erected, it is known that the engineers plan to construct two big towers and equip each with two 230-ft booms. The dish will then be built between and on each side of the towers.

Before the trucks attempt to take the material to the construction site, several miles of highway must be strengthened. Other sections of roadway will have to be straightened to accommodate the big steel hauling trucks. Loads will go as high as 100 tons, and steel beam lengths will be up to 100 ft.

The West Virginia State Highway Department will handle the roadway construction, but it will be paid for by the Navy.

Bridges present another problem. Between the steel fabricating mills and the site there are some 20 bridges to be crossed in Virginia and West Virginia. Some of these can be reinforced to handle the heavy loads, but there are a few small rivers that will have to be forded.

A 60-ft pilot radio telescope is being



Washington Monument.

Telescope Job

installed now at the Sugar Grove site to aid in the final design. It was built by the Kennedy Co. of Cohasset, Mass.

The pilot model is being erected on a two-story building adjacent to the site of the big scope.

The Navy started its nationwide search for an ideal location back in 1953. It had two prime requisites: Freedom from man-made interference; and freedom from extreme weather.

By 1956 the Navy had pretty much settled on the 1,500-acre site near Sugar Grove. It is virtually free from hurricanes, tornadoes, and earthquakes, and has only moderate wind, rain and snowfall.

To insure that the area would stay relatively free from man-made electrical interference, the West Virginia legislature passed a law in 1956 that throws a 10-mile blanket of protection around the Navy site. All electrical interference is banned within two miles of the site. Navy engineers will install suppressors to eliminate interference from existing electrical equipment from the few farms and business establishments there.

Navy says the telescope will have an optical range of 38 billion light years—19 times more powerful than the 200-in. Palomar optical telescope in California.

The next biggest U. S. radio telescope will be the 140-ft instrument under construction at Green Bank, W. Va., sponsored by the National Science Foundation (shown in picture). There are two 90-ft radio telescopes in Owens Valley, Calif., installed by the California Institute of Technology and sponsored by the Navy.

The British have a 250-ft telescope, and Russians are believed to have one 350 ft in diameter.

Cleveland Studies Master Plan

Cleveland has come up with a long-range master plan aimed at breathing life into the city's downtown area. Until 1956, Cleveland hadn't seen a major new building go up for nearly 30 years.

The city's planning director, Eric Grubb, and a staff of seven consultants based the plan on months of studies of pedestrian and vehicular traffic, parking areas, office building needs, hotel and convention facilities and residential preferences of Clevelanders. These are the recommendations:

• **Location of new office buildings on marginal property** near existing business areas and the main streams of public transportation. These would occupy some of the "decaying edges" of the present main business district and would serve to consolidate business properties in a closely knit, integrated section of the city. The plan suggests construction of two new office towers connected by a promenade to a proposed transportation center.

• **Consolidation of governmental functions** in a government center at the city's Mall area. Concentration of these activities would preserve the Mall as a civic center.

• **Development of an industrial park** in the northeast section of the city extending to the lakefront, where transportation facilities would be nearby.

• **Extension of the central lakefront** to take full advantage of a broad increase in air and Seaway traffic. This would include additional berths for Seaway cargo vessels and expansion of the existing lakefront airport.

• **Construction of high-rise apartment buildings** covering over 30 acres in each of two areas, adjacent to the central core section. The planners say they consider it "reasonable to plan for up to 6,500 dwelling units by 1970." All would be rental apartments and 80% would be one-bedroom units.

• **Building a subway along Euclid Ave., the main east-west downtown thoroughfare,** to connect east and west side branches of the City Transit System's new rapid transit line. The report suggests the possibility of a covered passageway adjacent to the subway. This could be used by pedestrians in bad weather to travel the length of the shopping district.

• **Improving downtown transportation by a redistribution of automobile traffic** around congested areas rather than through them. This would include widening some streets, easy routing of traffic to the city's new Inner Belt Freeway and provision for more efficiently placed points of access to the downtown area. Transportation also would be facilitated by provision for an estimated 8,800 new off-street parking spaces at surface lots adjacent to the Inner Belt interchanges, with shuttle bus service to the central areas. Ramp-type parking garages would be strategically located within the city's core.

• **Addition of about 330,000 sq ft of new exhibition space** to the present 110,000 sq ft of Cleveland's public hall.

• **Construction of a 600- to 1,000-room transient hotel** in the downtown area and a "motel row" farther east.

California Ups Water Ante Again

For the third time this year, California Governor Edmund G. Brown has raised the ante on his proposed water-projects bond issue. He now wants the legislature to increase it to $1.75 billion. The proposal started out in January at $658 million (ENR Jan. 29, p. 27).

The new move is aimed at gaining additional legislative support for the governor's water program, which includes pushing the plan to transport surplus water from northern California to the dry southern areas (ENR Mar. 10, 1955, p. 21).

The governor's new proposal is designed to quiet sectional differences between the northern areas of origin and the southern counties of need, which have delayed a state water development program for eight years.

To satisfy southern demands, it provides that contracts for water cannot be terminated by legislative act during the life of the bonds—50 to 60 years—and that contracts with public agencies will have the same sanctity as those with private parties.

If the measure passes, the Department of Water Resources estimated that in the next five years, $391,651,000 will be spent in the north (including anticipated federal funds) and $2,423,000 in the south. The major project in the development program, Oroville Dam on the Feather River, is in northern California. Expenditures would average about $152 million a year during the second five years of the construction program, then decline gradually.

The Oroville project was set back this month when the sale of bonds to finance the project was delayed. Bids were not received on four of the nine schedules. Construction was due to start this spring. Now work may be delayed until early 1960.

Has New Fund Formula Hurt Interstate?

The change in formula for allocating federal funds for the Interstate Highway Program is generally having no big adverse effect on contracting plans, an ENR survey indicates (see table).

However, the construction man planning ahead for 1960 would do well to examine closely the state he is interested in.

The first three allocations were made to the states on the basis of a "traditional" formula in which population was the main factor.

Then the formula changed—as planned in the 1956 Highway Act—with "cost-to-complete" the system in each state used as the basis for splitting up appropriations. Fiscal 1960 allocations made last summer were the first under the new formula.

Because of this change, 23 states received lower allocations for fiscal 1960 than for 1959. The other 25 and the District of Columbia got more.

The change in allocations brought some fears that the rate of rise in contract awards would slow down because the burden of increase would be on only half the states.

Here is what is actually happening, according to ENR's survey of the states.

Many states are planning to use money from both the fiscal 1959 and 1960 allocations for work scheduled during 1959. Fiscal 1960 allocations are thus, in some degree, reflected in 1959 work.

Six of the 23 states that are receiving smaller fiscal 1960 allocations have reported a reduction in Interstate contract awards planned for 1959. Overall, the states report a 39% rise in awards for 1959 (ENR Apr. 23, p. 21).

If fiscal 1961 allocations are made on the same basis as in 1960 ($2.5-billion total) the apportionment ratio will be the same as 1960's. That is, 23 states again will receive less than they did for fiscal 1959.

ENR, therefore, made another check of the states' contracting plans for 1960.

The contract awards rise apparently will continue in 1960 (see table). It will be a slower rise than this year's 39% increase. There will be a downtrend in a few states and "no change" over 1959 in many others.

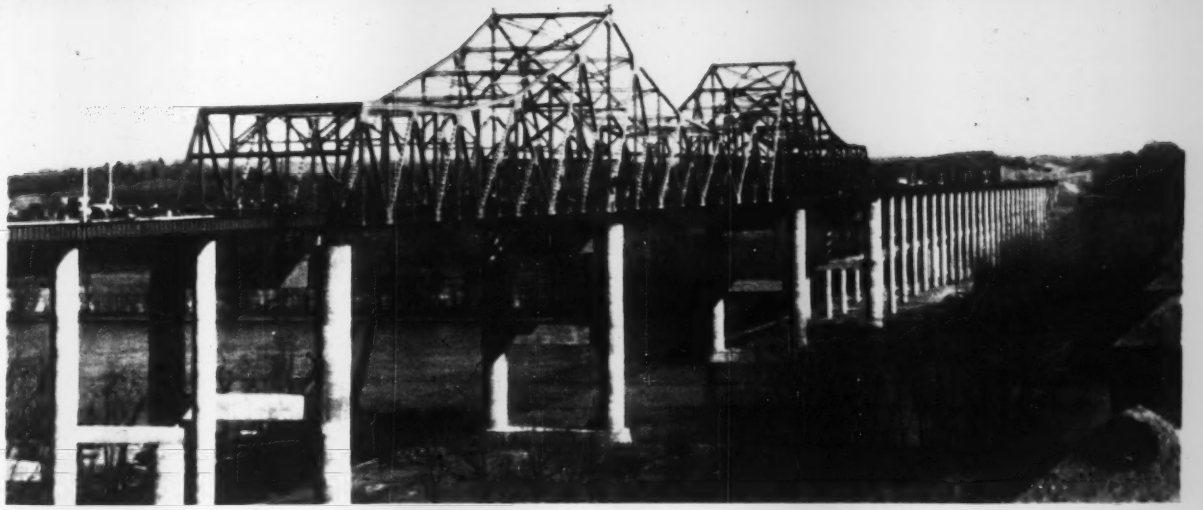
The changed allocations don't seem to be having a great effect because:

- Many states are using the allocations as fast as they come. A year's work is not predicated solely on the allocation for that year—next year's allocation is in hand or in mind. For example, many state plans for 1960 awards are dependent on fiscal 1961 allocations coming through soon. That's one reason for the importance of the highway financing battle in Congress, see p. 22.
- Those states that have been lagging behind now have a comfortable backlog of money for the next year or two.
- More money seems to be going for construction instead of right-of-way and other preliminaries.

The Record: Half the States Got More Money for Fiscal 1960

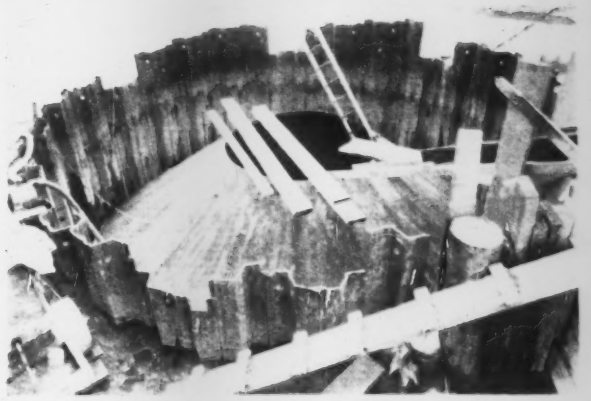
	Federal Allocation millions			% obligated as of 31 Mar '59			Will obligate 1960 allocations by			Contracting Plans		
	Fiscal 1959	Fiscal 1960	% Change '59–'60	1960	1959	1958	July 1 1959	Jan. 1 1960	July 1 1960	% Change Calendar '58–'59[3]	% Change Calendar '59–'60[3]	State comments on 1960 contracting plans
Alabama	44.7	49.1	+ 10	0	39	100				+ 63	+ 10	
Arizona	25.2	34.0	+ 35	0	55	100				+ 46	+ 25	Expects $30 million in construction
Arkansas	32.0	24.7	− 23	0	31	100				n.a.	no change	
California	125.7	252.8	+101	52	100	100	√			+ 55	+ 55	
Colorado	30.0	19.3	− 36	0	82	100			√	− 20	− 30	Decrease in allocation responsible
Connecticut	21.2	30.3	+ 43	0	39	100	√			n.a.	see comment	Depends on state bond financing
D. C.	13.8	24.7	+ 79	0	59	100			√	+345	+ 5	Based on dollar volume
Delaware	13.8	8.8	− 36	0	0	70				+500	+ 50	Plans now ready; pace will increase
Florida	37.4	64.5	+ 72	13	100	100		√		+110	no change	Looking to 1961 allocation, to continue volume
Georgia	51.2	60.0	+ 17	0	56	100			√	+127	n.a.	
Idaho	22.2	17.2	− 23	0	0	92				+ 61	no change	Plan to place $20 million under contract
Illinois	103.7	127.6	+ 23	14	100	100		√		+ 86	n.a.	
Indiana	53.5	71.7	+ 34	0	33	100			√	+ 60	+	Expect slightly higher volume
Iowa	44.8	23.6	− 47	0	95	100		√		+ 28	see comment	Depends on future allocations
Kansas	39.9	22.3	− 44	0	64	100			√	+ 23	− 23	Assumes 1961 allocation is coming
Kentucky	41.2	43.7	+ 6	6	100	100				+ 2	n.a.	
Louisiana	36.3	65.7	+ 81	20	100	100		√		+ 53	no change	
Maine	17.7	12.8	− 28	0	71	100		√		− 2	no change	
Maryland	26.4	56.0	+112	6	100	100		√		+377	+	Slightly higher volume if 1961 allocations are same as '60
Massachusetts	47.0	69.3	+ 47	29	100	100		√		+ 54	+ 48	
Michigan	79.1	97.8	+ 24	24	100	100		√		+ 52	+143	Predicated on high-level future allocations
Minnesota	49.6	46.9	− 5	0	61	100			√	+177	+ 35	
Mississippi	31.9	42.3	− 22	0	56	100			√	+191	n.a.	
Missouri	59.6	71.0	+ 19	12	100	100		√		+ 8	no change	If allocations are continued at 1960 rate
Montana	31.6	28.3	− 10	0	0	85				+289	no change	Has comfortable backlog fund
Nebraska	31.6	15.3	− 52	0	0	78				+121	no change	Unused allocations makes same rate possible
Nevada	23.0	13.0	− 43	0	0	94				+174	no change	Expenditures had previously been retarded
New Hampshire	13.8	13.7	− 1	14	100	100		√		+ 18	no change	Allocations for both 1959 and 1960 about even
New Jersey	48.2	80.5	+ 67	0	51	100			√	+245	n.a.	
New Mexico	26.7	29.8	+ 12	20	100	100		√		+ 21	+ 4.2	If Congress provides funds
New York	156.1	123.2	− 21	32	100	100	√			− 8	see comment	Depends on 1961 and '62 allocations
North Carolina	56.1	13.5	− 76	0	10	100			√	+ 20	− 25	Depends somewhat on '61 allocations
North Dakota	21.4	11.0	− 55	0	66	100		√		+ 96	− 50	On assumption that '61 allotment will equal '9
Ohio	94.1	162.0	+ 72	98	100	100	√			− 56	+ 74	Contract volume depends on '61 allocation
Oklahoma	39.6	22.6	− 43	0	52	100		√		− 56	see comment	Legislature in session
Oregon	29.9	43.1	+ 44	3	100	100		√		+ 9	− 30	Drop due to abnormally heavy volume for '59
Pennsylvania	117.9	101.4	− 14	0	76	100			√	− 21	no change	Two allocations available for '59; one may be for '60
Rhode Island	13.8	11.6	− 16	0	86	100		√		+ 2	− 47.5	Will double right-of-way expenditures
South Carolina	29.6	20.5	− 31	0	99	100		√		− 20	no change	May let some 1960 work from '59 allocation
South Dakota	25.5	10.5	− 59	0	0	91			√	+127	+100	Picking up lag
Tennessee	47.0	73.8	+ 57	9	100	100			√	+109	+ 59	To put all funds under contracts during fiscal 1960
Texas	126.5	112.4	− 11	2	100	100			√	+ 12	+	Will decrease if '61 allocation is not made
Utah	21.4	23.3	+ 9	0	52	100				+138	+ 25	Could increase more if funds were available
Vermont	13.8	23.5	+ 70	0	65	100	√			+257	+ 45	
Virginia	44.5	105.4	+137	0	61	100				+139	+ 64	If funds for 1960–61 are at least equal to 1959–60
Washington	35.1	45.0	+ 27	37	100	100			√	+135	+ 20	
West Virginia	26.2	31.2	+ 19	0	71	100		√		+ 18	n.a.	
Wisconsin	50.0	26.2	− 48	0	22	100		√	√	+ 24	see comment	Dependent on 1961 allocation
Wyoming	22.9	25.8	+ 13	9	100	100		√		+ 27	no change	Depends on 1961 and 1962 allocations
U. S.	**2,200.0**	**2,500.0**	**+ 14**							**+ 39**		

(1) As reported by USBPR
(2) As reported to ENR by 46 states and D.C.
(3) Rough estimates made to ENR



Some columns of Castleton-on-Hudson Bridge stand in corrosive swamp water. To protect them . . .

. . . Wrought-iron pier caps were made on site



. . . And placed to serve also as forms.

Wrought-Iron Caps Shield Bridge Piers

Truncated cones of wrought-iron plate will protect concrete piers of the Castleton-on-Hudson Bridge on the New York State Thruway, which was opened this week.

The wrought-iron caps serve both as protection from the corrosive effects of marsh water in the areas adjacent to the main stream of the Hudson River and as forms.

The $17-million bridge crosses the Hudson River eight miles south of Albany. Its 1.05-mile length is supported by a substructure of 42 pairs of circular concrete piers that vary in diameter from 5 ft to 14½ ft. These pier bents are spaced 97½ ft apart, except for three central spans of 420 ft, 600 ft and 420 ft.

The manner in which wrought-iron plate was used to cap 10 of the pier column footings is unusual. The foundations were constructed by driving steel sheetpiling to bedrock and filling them with concrete to form 24.2-ft diameter cylinders. The wrought-iron caps, truncated cones, were placed over these cylinders and the footings were finished by filling them with concrete. The sheetpiling was left in place and cut off at the bottoms of the wrought-iron caps after the foundation was completed.

The diameter of columns rising from the iron-clad pier tops is 8 ft.

Madigan-Hyland, New York City consulting engineers, designed the substructure. A joint venture made up of Arthur A. Johnson Corp., New York City, and Peter Kiewit Sons Co., Omaha, built it for $5.7 million.

Castleton-on-Hudson Bridge is a three-span continuous truss structure with a fixed-type center span. It has a minimum clearance of 135 ft above the 560-ft-wide river channel.

The west end of the bridge, in Albany County, has continuous stringer approach spans totaling 1,000 ft. The Rensselaer County approach spans, on the east side, run 3,000 ft.

The bridge carries two lines of traffic in each direction. The two 25-ft traffic arteries are separated by a 13-ft center mall, a "singing" curb. It is built up so that a disabled car can run onto the grid, but it will sing out with a warning noise if a car gets on by mistake. Pedestrians will not be allowed on the bridge. Automobiles will pay a toll.

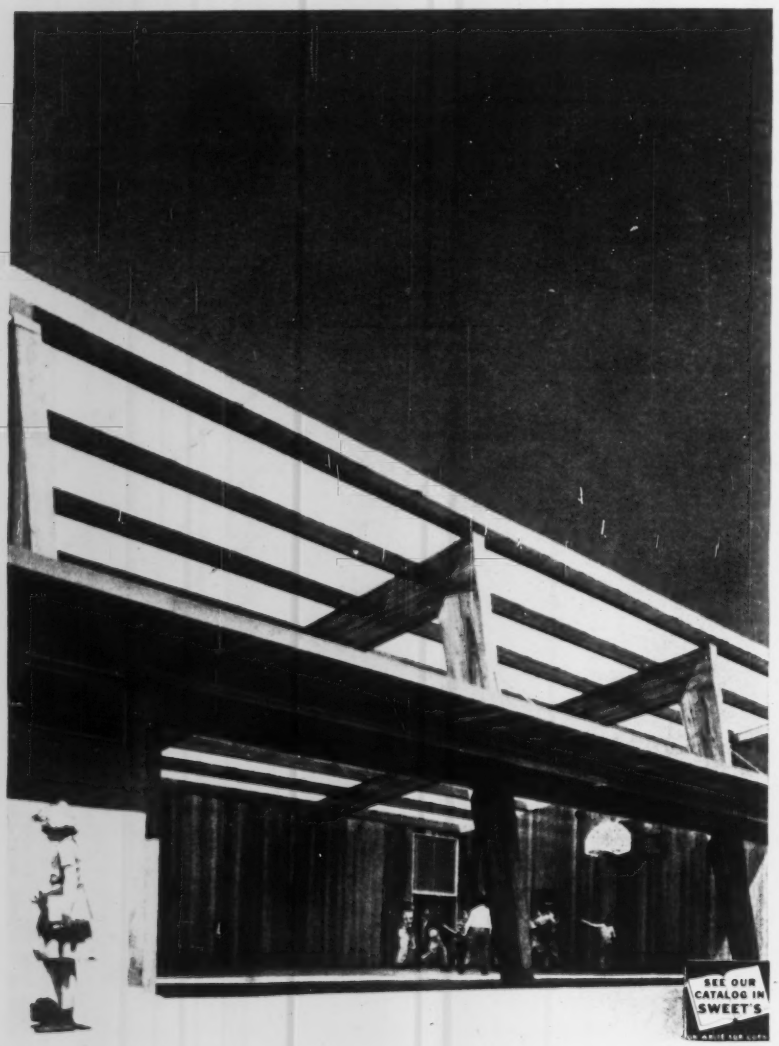
Harris Structural Steel Co., New York City, built the steel superstructure on an $8.5-million contract.

The bridge is built only 400 ft north of and parallel to a New York Central Railroad bridge. Tests made upstream and downstream showed that the river bed near the railroad bridge was best suited for foundations.

The bridge is situated on the western end of the Berkshire section of the Thruway (ENR Oct. 9, 1958, p. 26). This section is a 24.5-mile link between the Massachusetts Turnpike and the main line of the Thruway. The Berkshire section joins the Thruway immediately west of the Castleton-on-Hudson Bridge.

Playroom at Tokeneke Elementary School, Darien, Connecticut. *Architects:* O'Connor and Kilham, New York City. *Structural engineers:* Throop and Feiden, New York. *Mechanical engineers:* Joseph P. Wohlpart Associates, New York. *General contractor:* George L. Hickey, Inc., New York.

Space provided: 16 classrooms, kitchen and Common Room, covered play room, administrative suite, library, interior courtyard. *Pupil capacity:* 520. *Structural framing:* glulam beams spaced at 7'-9" for classrooms; glulam beam-and-column bents for Common Room and covered play room. *Exterior walls:* brick with concrete block in service areas; cyprus siding in play room. *Interior walls:* plastic coated fabric walls in classrooms, Common Room and halls. *Heating and ventilating:* radiant floor panel system, zoned and thermostatically controlled. Exhaust fans in classrooms, toilet rooms and kitchen. *Lighting:* semi-indirect fluorescent. *Roof surface:* tar and felt with white gravel surface; translucent panels over playroom and covered walks. *Floors:* vinyl asbestos tiles on concrete slab over insulating concrete fill and moisture barrier. *Volume:* 300,000 cubic feet. *Area:* 28,000 square feet. *Cost per sq. ft.:* $14.40.



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NYC Plans Water Tunnel To Supply Staten Island

A 10-ft-dia tunnel under New York Harbor is being planned to supply water to Staten Island. Construction of the $25-million facility could start in a year, with completion three years later.

Officials say the tunnel must be finished by 1965. Completion of the proposed Narrows Bridge at that time is expected to boom population on Staten Island.

The tunnel would connect with the New York City's main supply tunnels in Brooklyn and run 53,000 ft across the harbor to the existing Silver Lake Reservoir on Staten Island. The tunnel would lie between 600 and 1,200 ft below the surface depending on the depth of rock in the harbor.

'Small Job' Plan for Roads Saves Money for Vermont

The Vermont Department of Highways has made substantial savings by permitting relatively small Vermont contractors to bid on sections of the Interstate Highway System, according to the Vermont Roadbuilders Association.

Low bids on five highway projects ran about 20% below the department's total estimate of $5.6 million.

The contracts were broken up into parcels of under $1.5 million.

School Construction Funds Well Spent, Report Says

New York City is getting good value for its school construction dollar. So says a report issued by the New York State Department of Education in reply to charges of waste made last fall by the New York City Controller, Lawrence E. Gerosa (ENR Nov. 27, 1958, p. 27).

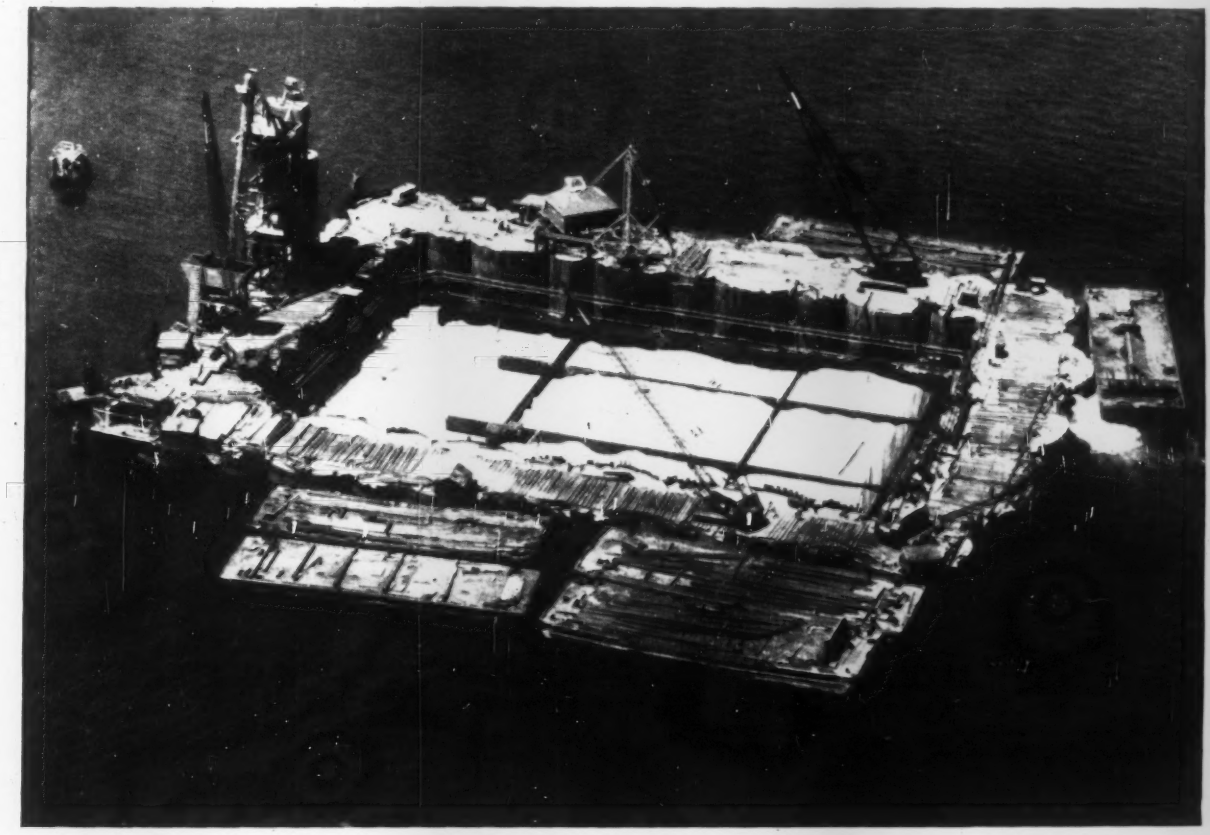
The report says, "Where economies might have been achieved . . . the amount saved would be but a small fraction of the publicized figure" ($100 million). The report was prepared by a committee headed by Henry T. Heald, president of the Ford Foundation and former civil engineering professor.

Mr. Gerosa said he would expect one educational department to defend another. He pointed to the fact that his auditing of school construction expenses was what led him to make the original charges and that he would now ask full legislative power to pass on all School Board expenditures.

Following release of the report, William H. Conkling, Superintendent of School Building Design and Construction, resigned. He denied that the controversy had anything to do with his resignation, and said he plans to return to private construction work.

HOW TO HANDLE WET JOBS

Project: Queens Anchorage, Throgs Neck Bridge, New York City
Contractor: Steers-Snare, *a joint venture*
Engineers: Ammann & Whitney



Sinking of huge bridge caisson speeded after wellpoints . . .

Dewater Man-Made Island 30 ft Below River

In order to sink this giant caisson a cofferdam-enclosed sand island was required. (See photo). Confident that wellpointing would result in a time and money-saving operation, Steers-Snare built the island not up to river level (which was the preliminary plan) but 25 ft below.

• **This greatly reduced** the yardage of sand fill, thereby eliminating additional excavation later on. However, Griffin engineers were confronted with a difficult dewatering job, since investigations indicated many unusual problems of soil mechanics, hydraulics and stability.

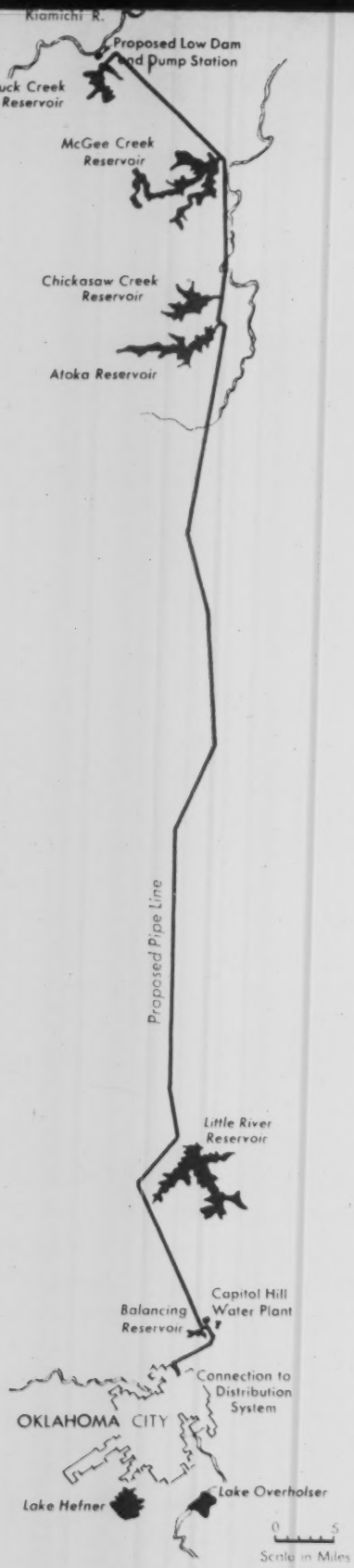
• **Solution? A specially designed Griffin** wellpoint system which attained absolute control of ground water and uplift pressure and insured the stability of the cofferdam.

GRIFFIN WELLPOINT CORP.

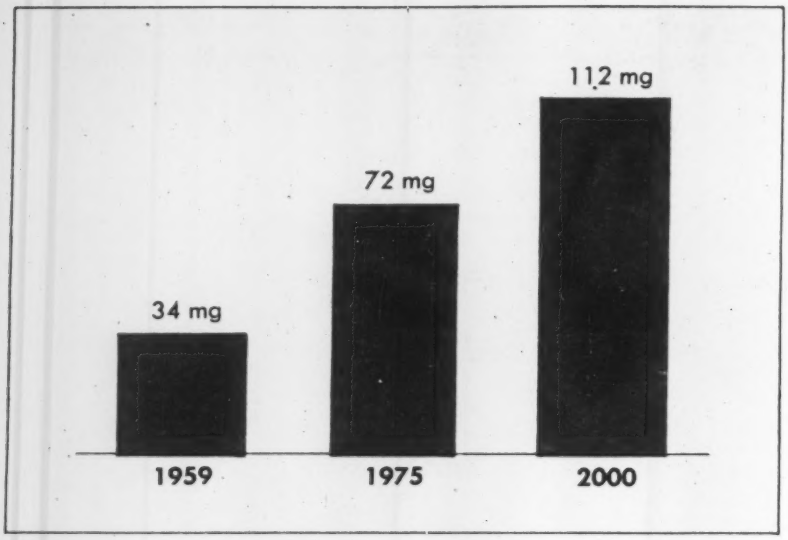
SALES • RENTAL • CONTRACT

GENERAL OFFICE: 881 East 141st St., New York 54, N. Y.

Branches: Jacksonville, Fla. • West Palm Beach, Fla. • New York, N. Y. • Hammond, Ind. • Houston, Tex.
In Canada: Construction Equipment Co., Ltd., Toronto • Montreal • Edmonton • Vancouver
In Venezuela: Drew Bear & Sons C.A., Caracas • Maracaibo



LONG PIPELINE will carry water over 100 miles from four new reservoirs.



Water demand will more than triple by the year 2000.

Oklahoma City Takes

For the third time in its history, Oklahoma City is taking to the hills to increase its water supply. This time it is going a long way—over 100 miles into the Kiamichi River area in southeastern Oklahoma.

The objective: to insure an adequate water supply for its booming industrial and population growth—both now and up to the year 2000.

The price: about $109 million.

The status: construction phase one is well under way. Second phase is being planned.

At present Oklahoma City's water supply system serves a population of about 290,000. Average daily pumpage is 34 million gallons. Gross annual need is about 65,000 acre-ft.

By 1975 the population will be close to 400,000. Annual need will then be about 116,400 acre-ft. Average daily pumpage will be 72 mg.

Projecting these figures to the year 2000, estimated population will be 500,000. Annual gross need will be 174,400 acre-ft. Average daily pumpage will be 112 mg.

• **North Canadian water**—Since its beginning Oklahoma City has depended upon the North Canadian River for its water supply. Waters of the river were adjudicated in 1937 and Oklahoma City received rights to 90,000 acre-ft annually. The city has two reservoirs on the river with a combined storage of 90,000 acre-ft. In addition 103 wells provide an auxiliary supply of water. The city also rents 90,000 acre-ft of water storage space annually in the Corps of Engineers' Canton Dam and Reservoir project 100 miles upstream on the North Canadian River. But it must give up that supply in a few years to irrigation interests that have first priority.

Chances are the city will not have to start relinquishing this rented water storage space for four or five years, pending completion of the initial irrigation facilities. But it was this eventuality that forced the city to look elsewhere for more water. Moreover, the rate at which the Canton storage supply is given up will govern the speed of construction of additional water facilities.

Faced with the problem of diminishing supply in the face of ever-increasing demand—both domestic and industrial—the City Water Department under Morrison B. Cunningham, superintendent and engineer, and his assistant, Frank S. Taylor, has launched a long-range water program.

The program is based on a comprehensive study of the water supply problem by C. E. Bretz, consulting engineer, Oklahoma City, and his associate, Kenneth Klaffke.

The report shows that the city's water needs projected to the year 2000 can best be served by going to southeast Oklahoma. The city is 105 miles from the first new reservoir under the plan.

The $5-million first phase of this $109-million reservoir project includes Atoka Dam, now under construction. A proposed 60-in. dia pipeline will bring water from this reservoir to the city.

Atoka Dam is under construction to create first new reservoir.

to the Hills for Water

• **Total lift: 610 ft**—Studies are now under way on the exact location of this pipeline and the number of high-lift pumping stations required. Three to five of these stations will lift the water a total of 610 ft. Right-of-way 100 ft to 150 ft wide is being purchased for this line and a second line to be built several years from now.

The first plan also includes aerial surveys for the pipeline location, preliminary project plans, design plans and construction of Atoka Dam, and highway relocations, purchase of 15,800 acres at the damsite at a cost of $78 per acre and 2,500 acres of land for the terminal reservoir south of Tinker Air Force Base at a cost of $470,000. When full, Atoka Reservoir will have a surface area covering about 5,900 acres.

The second phase will include construction of the pipeline, a 30-mgd filtration plant, pumping stations and connections with the city's present water system. Ultimately, the filter plant—to be called the "Capitol Hill" filtration plant—will be enlarged to 120 mgd.

Also in this second phase is a terminal reservoir with initial capacity of 20,000 acre-ft with provisions to expand it to 100,000 acre-ft. The estimated cost of the second phase construction is $56 million.

• **Atoka Dam**—A $1.1-million contract for the construction of Atoka Dam, spillway and appurtenances was awarded early last year to the Guy H. Lumpkin Construction Co. of Oklahoma City. Completion of this part of the project is scheduled this spring.

Located on North Boggy Creek, 135 miles by highway southeast of Oklahoma City, Atoka Dam is a rolled earth fill of 500,000 cu yd. It is 700 ft long with a maximum height of 80 ft above stream bed, and contains an impervious core wall of selected material.

The water, or upstream, side of the embankment is protected with a 9-in. blanket of sand and gravel filter, and 18 in. of dumped riprap. The downstream side of the dam will be terraced and sodded.

A reinforced concrete spillway at the east end of the dam has a design discharge capacity of 18,000 cu ft per second. A 30-ft gravel roadway and 26-ft roadway bridge extend across the dam and spillway.

A $560,000 contract was awarded last year to M. A. Swatek & Co., Oklahoma City, for highway relocation in the Atoka Reservoir area.

With normal rainfall, Atoka Reservoir should be filled within one year after completion. When it is filled and the 60-mi-dia pipeline, pumping stations, filtration plant and terminal reservoir are completed, that phase of the program will provide about double the amount of water that is now available from the North Canadian River.

Atoka Reservoir will have a total storage capacity of 125,000 acre-ft and is expected to provide a firm supply of 50,000 acre-ft annually.

• **Second phase timetable**—Preliminary engineering is now under way on the second phase. Major construction will probably get under way within five

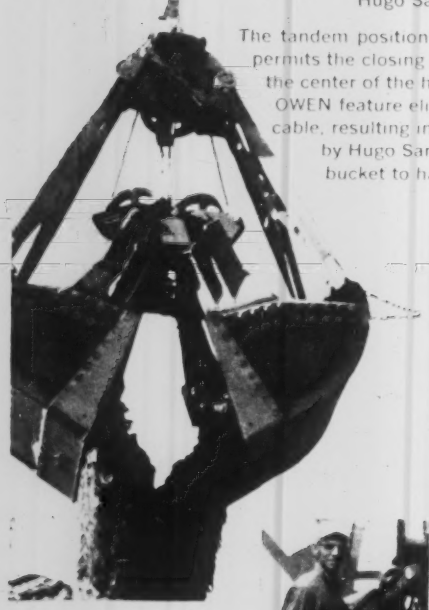
ATOKA'S SPILLWAY will have discharge capacity of 18,000 cu ft per second.

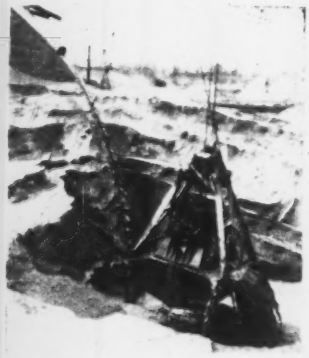
OWEN BUCKETS

new center line reeving doubles cable life

"Our new OWEN Bucket is great. That new center line reeving more than doubles our cable life," says Kenneth Muster, Supt. for R. F. Muntz, owner of the Hugo Sand and Gravel Co. of Kent, Ohio.

The tandem positioning of the lower closing sheaves permits the closing line lead to pass directly through the center of the head of the bucket. This exclusive OWEN feature eliminates excessive bending of the cable, resulting in increased cable life experienced by Hugo Sand and Gravel. It also permits the bucket to hang plumb from the crane boom.





"Our operation is tough on a clamshell, but all these improved OWEN features have greatly reduced our maintenance costs and cut down-time," claims Mr. Muster.

This OWEN Clamshell, with all moving parts lubricated . . . with all arm and sheave pins, plus the main shaft, having triple lip grease seals . . . has heavily cut the high maintenance expense of handling this sand suspended in water that comes directly from the wash plant.

Send us your requirements.
OWEN Engineers are at your service at all times.

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BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

. . . Oklahoma water plans

years. It will be about a three year construction program.

• **Phase three**—The third phase of the program will include McGee Creek Dam and reservoir, with 250,000 acre-ft of storage and a firm yield of 55,000 to 60,000 acre-ft per year.

Two other dams being considered in the long-range plan are: Buck Creek Dam with a storage of 50,000 acre-ft and an annual firm yield of 30,000 to 35,000 acre-ft; and Chickasaw Creek Dam with 100,000 acre-ft of storage and a firm yield of 15,000 acre-ft annually. Total estimated cost of the third and fourth construction phases is $68 million.

• **Phase four**—The fourth and final phase includes construction of a low dam across the Kiamichi River near Movers, Okla. The raw water line, which by that time would be completed from Oklahoma City to McGee Creek Reservoir, would be extended to the Kiamichi River. A raw-water line connection would also be made to Buck Creek Reservoir.

When these facilities are completed, together with all pumping stations in the whole project, water could be pumped direct to the city from the low water dam on the Kiamichi. Also to maintain an adequate amount of storage, Kiamichi water could be pumped to any of the four storage reservoirs. An additional raw-water line would be constructed from McGee Creek Reservoir to the Capitol Hill water treatment plant as part of the fourth phase.

The quality of water in the Kiamichi River is excellent. Total hardness ranges from 11 to 30 parts per million of calcium carbonate. No softening would be required.

Another plan for increasing Oklahoma City's water supply on a long-term basis was proposed two years ago (ENR-Apr. 11, 1957, p. 27). It proposed a 125-mile combination water supply and navigation canal to provide the city and central Oklahoma with 1.5 to 2.0 billion gallons of water per day from the Kiamichi Mountains and the southeastern area of the state.

As Oklahoma City gives evidence that it can furnish adequate water, more and more industries are attracted. Last December ground was broken for a $30 million Western Electric plant, which will use at least 1 mgd under full operation. One industrial area of the city is building up so fast that the city is spending $380,000 to lay four miles of water mains into it. The Water Department's distribution system now comprises over 925 miles of water mains up to 48 in. dia.

I want a new plant building.

I want it fast.

I want it strong and tough.

I want few columns, more open areas.

I want a building that's easy to expand.

I want to keep the initial cost low.

I want to keep maintenance costs low, too.

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Give the man what he wants: Recommend framing his plant building with structural steel. Only steel framing meets all his demands. Both steel producers and steel fabricators have expanded facilities. There's an ample supply of the fabricated structural shapes you need--when you need them.

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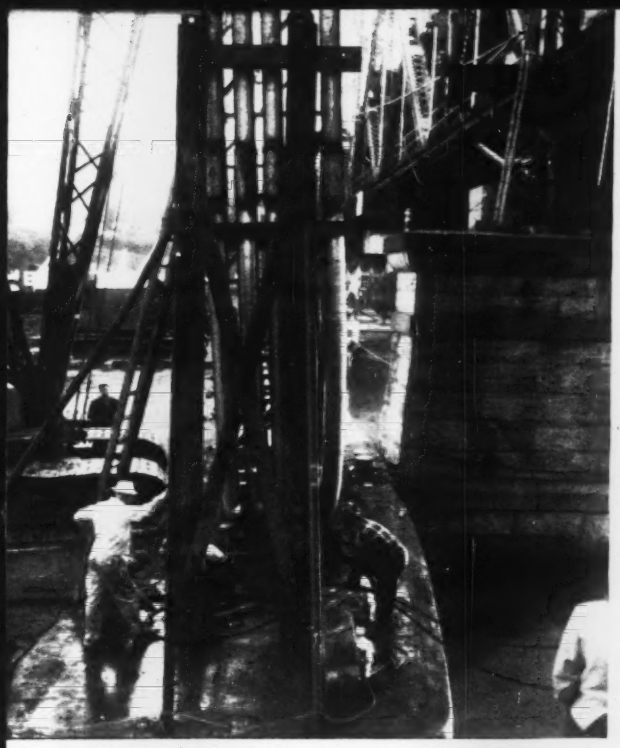
BETHLEHEM STEEL

BETHLEHEM STEEL

Special split sleeve couplings—also fabricated from 4-D Wrought Iron Pipe—were used in pre-assembly of the electrical conduit on the scow.

The 4-D Wrought Iron conduits—with degree bends at each end—were banded together prior to placement by William H. Moore Building Corporation and Lopier Construction Corporation, New York, N.Y.



Two ends of conduit were butted together inside the split sleeve coupling. Two clamps secured the longitudinal edges of couplings to conduit ends prior to tack welding. Then, clamps were removed and the welding job completed.

Designer: New York City Department of Public Works, Bureau of Bridge Design; Frederick H. Zurmuhlen, P.E., R.A., Commissioner. Contractor: Jandous Electric Construction Corp., New York, N.Y. Supplier: Charles F. Guyon, Inc., New York, N.Y.

4-D Wrought Iron conduit protects electric cables under New York City's new Broadway Bridge

HERE'S WHY: INACCESSIBILITY

"Because of the inaccessibility of this conduit," says Jack Joyce, chief electrical engineer for New York City's Department of Public Works, "it was vital that we provide adequate protective conduit for these electric cables."

Uncompromising corrosion-resistance and uninterrupted service were key considerations here. So, engineers specified 4-D Wrought Iron for fabrication into 6- and 8-inch diameter conduit to carry all electric cables between the span's lift towers.

4-D's highly refined base metal impregnated with non-rusting iron silicate fibers is a proven buffer against corrosive attack encountered in conduit services. Long random lengths reduce the number of joints required. Impact resistance and easy fabrication are also part of the quality package that is 4-D Wrought Iron conduit.

Complete size ranges of 4-D Wrought Iron conduit, black and galvanized, are stocked by established distributors throughout the country. U. L. labeled wrought iron conduit is also available: sherardized and MVC-1 coated.

HERE'S HOW: SUBMERGED TRENCH INSTALLATION

This 80-ton conduit unit was placed on a sand base in a 10-foot-deep trench blasted into the Harlem River's rock bottom 33 feet below water surface. Then, workmen backfilled the trench with sand.

Next came assembly of the 316-foot-long conduit unit on the deck of a 327-foot-long scow. Finally, they lowered it with four closely coordinated cranes. A row of five 6-inch diameter conduit was positioned on top of five 8-inch diameter conduit. This unit is in to stay. 4-D Wrought Iron lasts.

BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS

A. M. BYERS COMPANY, CLARK BUILDING, PITTSBURGH 22, PA.

Corrosion costs you more than Wrought Iron

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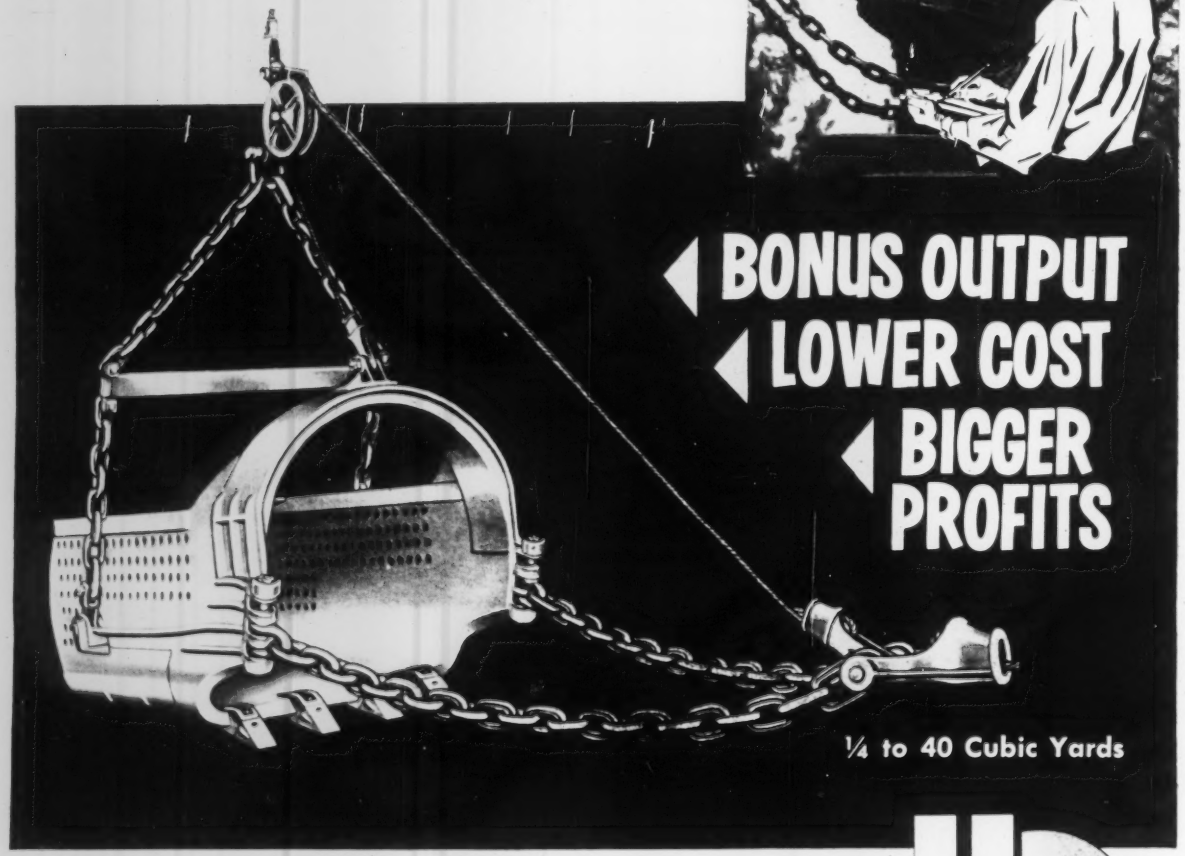
HENDRIX
DRAGLINE BUCKETS



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¼ to 40 Cubic Yards

"A Type for Every Digging Purpose" • • • Perforated or Solid

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

Hendrix Lightweight DRAGLINE BUCKETS

CIRCULAR CONCRETE COLUMNS were formed with metal-lined, wood half cylinders held together by steel strapping.

Cutting Forming Time for Bridge Piers

Paul Gordon
Structural Engineer
Chicago

By tying together prefabricated, round column forms with steel strapping, a Chicago contractor estimates he cut in half the time it usually takes to erect and strip pier forms.

The savings came during construction of bridge piers in the Salt Creek section of the Northern Illinois Toll Road.

The contractor, Hodges Construction Co., points to these advantages of the method:

- Use of special form-tying accessories was completely eliminated.
- No special trades were involved.
- Carpenters who erected the forms and placed and secured the strapping needed no special training.

Form ties were made of 1.25x0.05-in., heavy-duty strapping with wax-free finish applied as recommended by engineers of the Acme Steel Co., which furnished the strapping.

• Hydrostatic pressures—The method used for determining band spacing was the same as that normally used by superintendents and engineers for conventional wale-and-form-tie spacing. Hydrostatic pressure of concrete on the form staves was just computed; then the resulting band tensions were determined by moment distribution. The

TRUCK CRANE positioned the circular forms over reinforcing cages.

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STRAPPING TOOL holds steel strapping under tension while ends are locked together.

initial tension in the bands pulled the "slack" out of the forms, reducing form joint marks.

The forms were preassembled by placing each semicircular half section on its side, then placing its companion piece on top to form a cylinder. Heavy-duty steel strapping was applied at the intervals determined by computation. The forms were faced with 20-gage galvanized sheet-metal liners.

A total of 36 columns was formed by this method. They were 42 in. in diameter and averaged 16 ft in height. The columns are supported on a continuous mat resting on steel H-piles and carry the prestressed concrete girders and concrete roadway slabs of the bridges.

• **Continuous pours**—The reinforcing steel for the columns was preassembled in cages and hoisted into final position with a crane. Each column was concreted in one continuous lift. The concrete had an average density of 150 lb per cu ft, and a minimum compressive strength of 3,000 psi at 28 days. It was vibrated continuously while being placed in the forms.

The metal-faced wood forms were used six times in forming the 36 columns.

In addition to these columns, solid concrete piers in the creek bed also were formed by this method. The piers are 41 ft long, 26 ft high and 3.5 ft wide. They have rounded ends, which also are formed with the column forms.

To do this, the loop of strapping had to be lengthened to include the straight panels lying between the rounded end forms.

The semicircular sections used in forming the ends of the solid piers, pier caps and circular columns were used a maximum of about 25 times. They not only improved the appearance of the concrete surface but also reduced the costs of the formwork.

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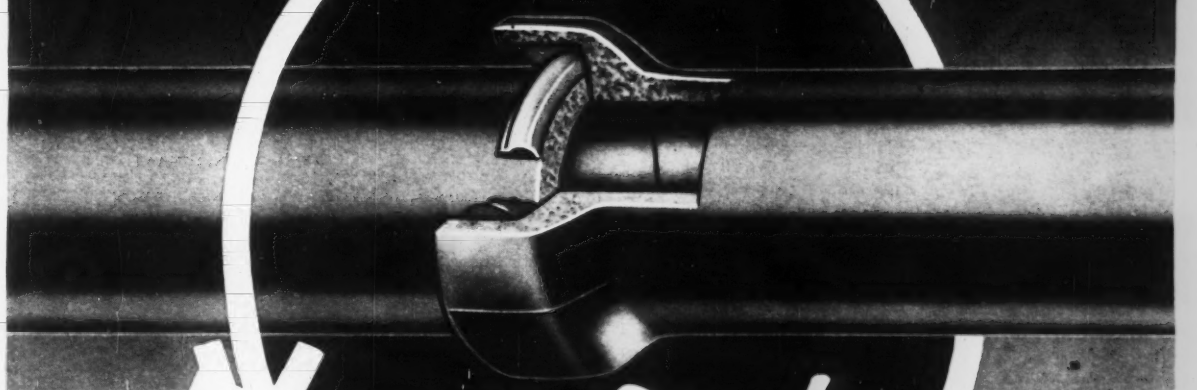

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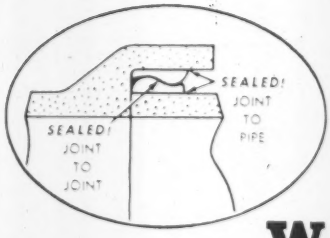

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The Robinson Clay Product Co.....Akron, Ohio
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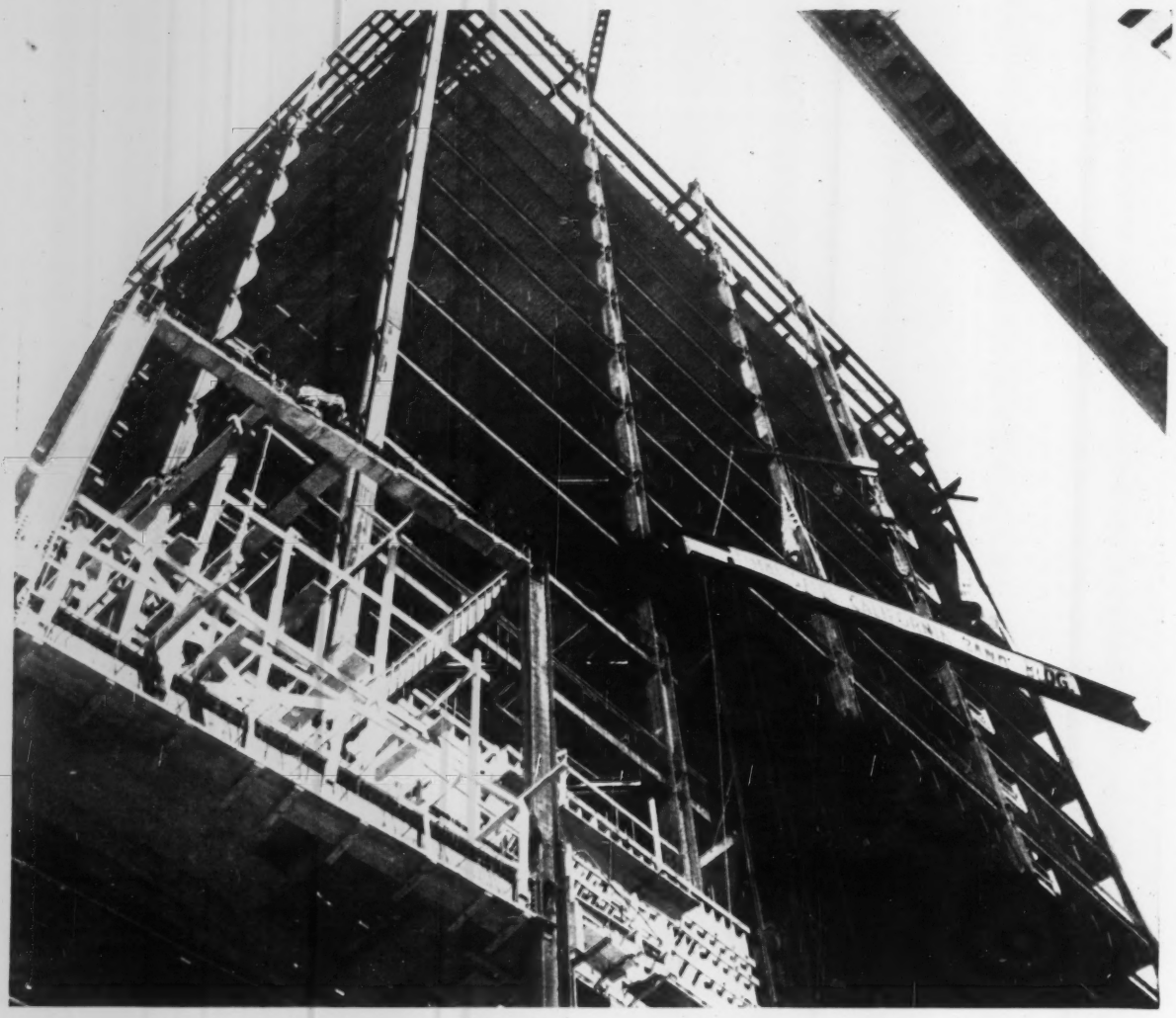
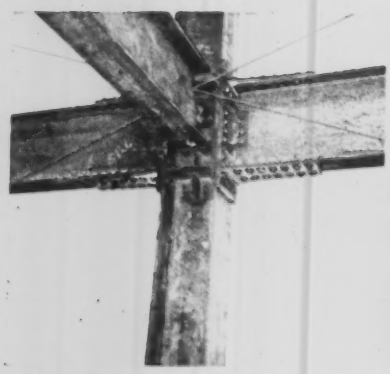
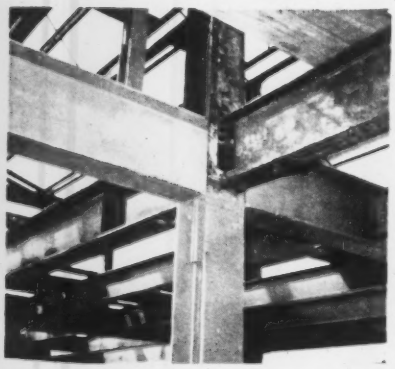


Steel frame for office building goes up 18 stories—5 stories more than previously allowed.

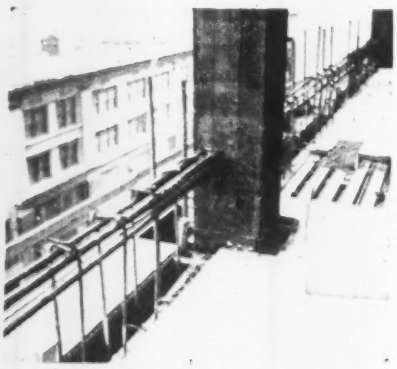
LA Gets First Tall Building



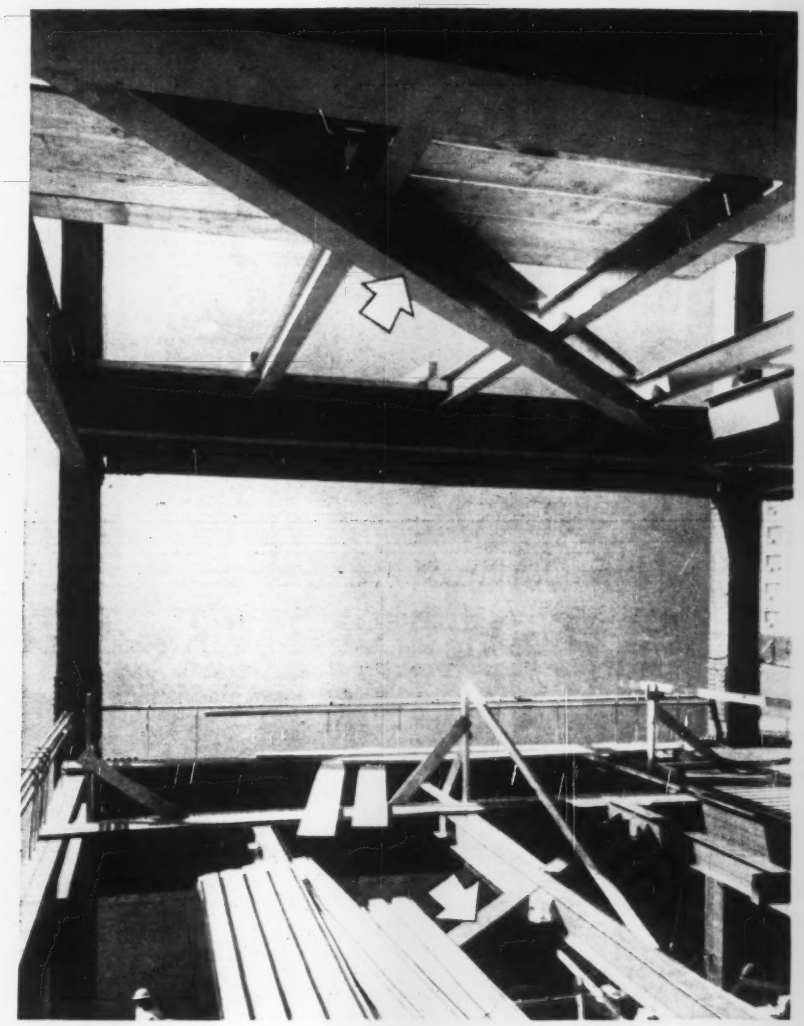
MOMENT CONNECTION is used at exterior column, but . . .



SIMPLE CONNECTION joins girders to interior columns.



REINFORCING of high-strength steel for spandrel beam passes through columns.



Diagonals in floor system are part of horizontal truss bracing.

Under New Code

The first tall building to be constructed in Los Angeles since height-limit code restrictions were removed is the 18-story California Bank building. It's located in the heart of the Los Angeles financial district, at 6th and Spring Streets.

Actually, it's not very tall compared with buildings in some other cities. It reaches 267 ft above street level. But that's a lot taller than the 150 ft to which Los Angeles buildings have been restricted for many years. Only existing buildings in the city exceeding 150 ft are the 464-ft-high City Hall and the 257-ft-high Federal Office Building.

Erecting a tall building in Los Angeles is still not a simple matter. The frame must be designed to resist earthquake stresses. And the city code restricts the building area to 13 times the lot size—that limits building area to the maximum under the old 13-story height limit. Besides that, parking space must be provided in proportion to usable building area.

First three floors of the California Bank building occupy the full lot area, or roughly 132 x 155 ft. Starting at the fourth floor there is a 15-story tower, 112 ft square, that includes four 28-ft bays in each direction. Fourteen of these tower floors are for office space, while the top story is for mechanical equipment. This story includes a substantial mezzanine area.

Parking is provided for 230 cars in the first three floors below street level. A fourth basement level includes the main bank vault. An elevator machine room forms a fifth basement level going down to 63 ft below street level. Thus, the structure is the deepest constructed in Los Angeles.

This depth developed problems of underpinning an adjacent building (ENR Aug. 21, 1958, p. 38).

Architectural treatment of the tower is vertical in character. Windows are recessed between continuous vertical piers covered with limestone facing. This has an impact on the structural design.

• **Lateral force resistance**—Resistance to lateral force is provided entirely by the exterior walls. This is possible because these walls are concrete-framed around the window openings. The concrete is needed to support the limestone facing.

In many modern buildings with glass-and-metal or all-glass panel exteriors, lateral force resistance would be provided in interior shear walls or by heavy moment connections in the steel frame. By taking the lateral force in the exterior walls in the California Bank building, the interior is left free, except for the columns and for the framing around the elevators and utility core.

All of this means that the concrete exterior walls are designed to resist 100% of the lateral force requirements of the Los Angeles code. The code provides, in addition, that the frame must take 25% of the lateral forces for buildings over 13 stories. This is taken care of in the California Bank building by moment connections at the exterior joints.

All interior joints in the steel frame are nonmoment connections. Because of the rigid nature of the concrete encasement, the concrete would resist lateral forces before the steel frame would. But moment connections were needed anyway for erection stresses.

The rigid nature of the building cuts down deflections, which means that an earthquake would cause much less superficial damage; plaster cracks for example. Under earthquake stresses, more flexible buildings suffer substantial dollar damage from cracked plaster and windows, without any significant structural damage.

Steelwork in the building was shop riveted, and high-strength bolts were used for major field connections. A typical exterior moment connection for girder to column is a split T type. Beam flanges are connected to split T's with from eight to sixteen 1-in. dia high-strength bolts.

Column flanges are connected with eight bolts or rivets varying from ¾ to 1 in. in diameter.

(*Turn the page*)

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In the upper stories girders are 24-in., 76-lb, WF members, and exterior columns are 14-in. WF members weighing about 142 lb per ft.

Exterior columns in the bottom floors are thickened to 14-in., 320-lb, WF sections with the addition of coverplates up to 22 x 1⅝ in.

Interior nonmoment connections are standard series A, with two framing angles and cap-and-seat angles for girder-to-column flange connections. These joints were made with machine bolts.

On the other hand, for girder-to-column web connections, erectors used a typical stiffened seat connection with two vertical angle stiffeners under the seat angle. Interior girders are 18-in., 105-lb, WF sections and interior beams are 16-in., 36-lb, WF members. There are five equal spaces per bay between girders.

The floor system is cellular steel decking, providing wiring races and functioning as a horizontal diaphragm for structural purposes. The decking is topped by a 2½-in. thickness of conventional concrete. Thus, the diaphragm is a combination of steel and concrete, which distributes lateral forces to the exterior walls.

Along the south wall the diaphragm is interrupted by an elevator shaft, a stairwell and duct shaft. Horizontal steel trusses in the floor system in this area carry the diaphragm action to the exterior walls.

At the fourth floor, where the building tower is stepped back, shear resistance is transferred from the exterior walls of the tower to the exterior walls of the lower portion. This floor is 6-in.-thick reinforced concrete.

Executive offices of the bank are located on the fourth floor. They have glass doors which open out onto a planted patio.

• High-strength reinforcing. Exterior walls are a series of vertical piers and horizontal spandrels. The piers are 2 ft, 6 in. wide by 1 ft, 8½ in. thick. The reinforced concrete spandrels are 8 in. thick and 3 ft, 8½ in. deep. Since the inside of the spandrel is flush with the pier, the vertical member sticks out on the exterior like a rib, with limestone covering three sides. Spandrels are metal covered.

Location of the spandrel beams is such that horizontal steel must pass through the columns. To limit the area that is taken out of the column flanges, the designers called for high-strength reinforcing bars at this point. They asked for rail steel or hard-grade steel bars with 100,000 psi ultimate strength, so a 30,000-psi working stress could be used. At the time the steel work was done, however, this type bar was not available in the Los Angeles area. A special rolling of nickel steel bars was made to provide reinforcing with ultimate strength in excess of 100,000 psi.

The high-strength bars serve only as dowels penetrating the column and extending out from each side. The rest of the bars are mild steel.

Interior design of the first-floor banking level calls for a circular architectural opening in the second floor. This results in two-story-high columns with no lateral support. It has little effect on the diaphragm action of the second floor, since the opening is practically in the center of the area.

Claude Beelman and Associates are the architects-engineers. Brandow and Johnston are the structural engineers. C. L. Peck Construction and Realty Co. is general contractor.

Steelwork was by Bethlehem Pacific Coast Steel Corp. Interior banking areas are being designed by Henry Dreyfuss.

LA TOWER, 15 stories high, sits on a three-story base that occupies full lot area.

Should the states have their own building codes? Only 16 of them do. Why aren't there more? You'll find the answers on p. 21.

600 hp Michigan replaces tandem-pushers on Hugh Steele Inc. highway job

Earns $126 extra per hour

"Earning their keep!?! Why, in a year, I could run them into the middle of the Chattahoochee River, and still walk away with a profit!"

Hugh Steele is talking about three rubber-tired Michigan Dozers that are making their mark in big, bold dollar signs all around his 18.1 mile highway contract near Ashburn, Georgia.

Biggest profit producer is in the cut. It's a *600 hp* Michigan Model 480! This big rig started out in demonstration against two 190-hp crawlers push-loading in tandem. The results were so one-sided Mr. Steele wouldn't let Atlanta distributor Stith Equipment Co. take the Michigan off his job.

Scales, stop watch tell the story: 14 more loads per hour

With scales and stop watches, this production story was recorded:

Material	Model 480 Sandy clay (3000 lbs/yd)	Tandem Crawlers Sandy clay (3000 lbs/yd)
Scraper capacity (each of 12 machines)	25 yds heaped	25 yds heaped
Average load time	30 seconds	44 seconds
Pusher cycle time	60 seconds	84 seconds
Average payload, scale weighed	60,000 lbs	48,600 lbs
Average pay yds	20.0	16.2
Scraper loads per 50-min hr.	50.0	35.7
Scraper output per 50-min hr.	1,000.0 yds	578.3 yds

In terms of cold cash, these figures mean simply that the Michigan *earns more dollars per hour*. A lot more! In 30c dirt, its *extra earnings* average *$126 per hour* over tandem pushers, according to Mr. Steele.

Faster pushing nets bigger pay loads

Watch a few push-loading cycles and you'll see why. The Model 480 has half again as much power as the two crawler-pushers *combined*. It backs up faster than crawlers, and being one machine instead of two, naturally positions faster (24 seconds faster, on the average, on this job). It pushes faster (at speeds up to 5 mph), which both reduces load time and keeps the dirt more "alive." Result? higher, tighter, bigger loads—and more of them.

Other Michigans save time on fill-compaction assignment

Just as the big Model 480 is producing profits in the cut, so too are two other Michigan Dozers saving money for Owner Steele on the fill. These units are both 262 hp Model 280's. They are spreading fill and compacting . . . achieving specified 95% Proctor in two to three high-speed (7½ mph) passes.

Speed scattered odd jobs

And that's not all. Go-anywhere 28 mph mobility allows the Michigans to sneak away from main assignments to tackle emergency jobs. Towing disabled vehicles, for example. Back-filling around culverts. Building up low spots in haul roads.

These are just a few of the odd jobs. *But the real advantage of Michigan Dozers*, Mr. Steel says, *is their ability to outperform crawlers on many production jobs too.* And do it day after day, with dependability equal to that of Michigan Tractor Shovels. There are four size Dozers to choose from: 162, 262, 375, and 600 hp. Your Michigan Distributor will be glad to show you one in action so you can judge its advantages for yourself.

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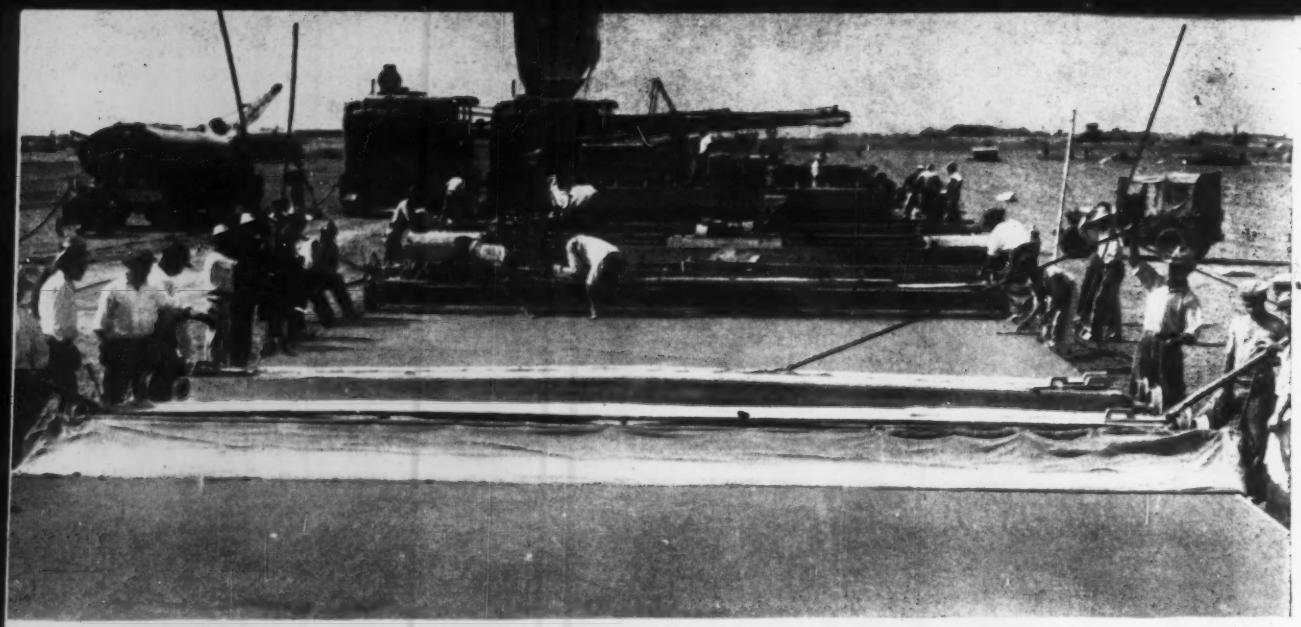


Putting down this concrete runway in the Azores meant . . .

1. INTERCEPTING water from the island's sewerage system . . .

2. HANDLING nearly one million bags of cement shipped from Portugal . . .

3. USING cane fiber in the sawed contraction joints.

Even the Kitchen Sink Helped

Richard H. Nolan

Air Force Installation Engineering Organization for Azores Islands

Water from sewage for concrete, cane fiber for joint construction and cement delivered in nearly one million bags went into building an aircraft runway on Santa Maria in the Portugese Azores.

An $8-million contract called for a portland cement concrete pavement over an existing asphalt runway. The new pavement is 200 ft wide, 10,000 ft long and 18 in. thick, increasing to 20 and 22 in. at both ends. The extra-thick pavement was necessary because of the poor quality of existing foundation material.

• **Water**—Scarcity of water on the island posed a problem. There were no lakes, river, ponds or reservoirs from which to draw the volume of fresh water needed. Deep wells could supply pure water for normal usage, but not enough for the paving job.

Solution was to set up a water purification plant to treat water intercepted from the island's sewerage system. Each day, 70,000 gal of waste water were sand-filtered, chlorinated and stored in a 500,000-gal-capacity pond lined with soil-cement. This was used in the concrete mix.

A larger pond received water from the airport's natural run-off. This water was used for aggregate washing.

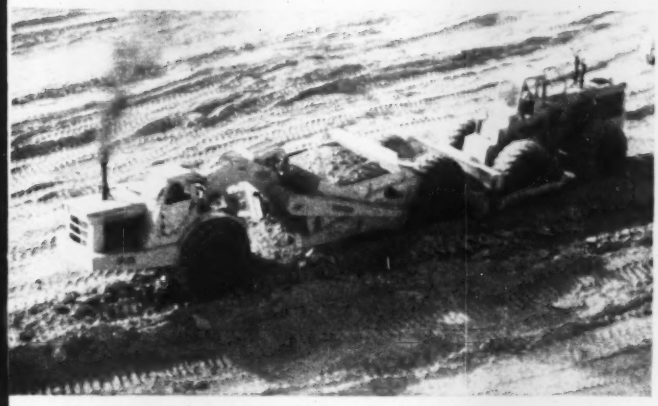
A third pond was filled with sea water for subbase and stabilized aggregate base work.

• **Cement**—Because of poor unloading facilities, cement for the paving was shipped from Portugal in nearly a million bags. Just getting them to the site called for an extensive stevedoring effort.

Then came the tedious operation of breaking open each bag and dumping the contents in a hoppers that discharged into trucks. In effect, the cement was hand fed bag by bag at the batch plant.

• **Aggregate**—Quarries two to four miles away supplied aggregate for the concrete. The quarries consisted of basaltic

From coast to coast, owners report *"more work done"* with Michigan Scrapers



CALIFORNIA

U. S. Borax & Chemical Corp. digging out largest known deposit of sodium borate in world, gets BIG production from team of 29 yd Model 310 Michigan Scraper and 600 hp Model 180 Michigan Dozer. Payloads weigh out at 26 yds—3 yds more than biggest track-type pushers could load previously.

TEXAS

T. R. Vardeman & Son Construction Co. digging lake for City of San Augustine, posts good production average with their Model 210 Michigan Scraper. On 2,400 ft cycles, 19-yd rig moves 15 loads per hour.

KENTUCKY

Holloway & Sons Construction Co. building quarry-to-river dock access road, loads Model 110 Michigan Scrapers with small (85 hp) pusher, yet gets 8¼ pay yds, scale-weighed, per trip. For added versatility, the 10½ yd pans interchange with 15 ton Rear Dumps. Scraper is also available in 4-wheel towed model.

FLORIDA

S. M. Wall Co. building a 10 mile, 120,000 yd cutoff around city of Archer, teamed two Model 210 Michigan Scrapers with a Model 280 Michigan Dozer: got 14 pay yd, 40 sec loading. Scrapers and pusher provided the efficiencies of *identical power trains*: matched speeds, easier maintenance, lower parts stocks.

NEW JERSEY

Salleon Inc. forced by high labor costs to lay off men after each small job, then rehire for new contracts, solved critical operator training problem with Michigan Scrapers. Power-steered, power-shifted, torque converter Model 110's are "so easy to run," says owner, "new men become proficient after only a few cycles."

CONNECTICUT

Brancifort Bros. grading new shopping plaza, moved 1,400 yds per 9 hour day with their two Model 110's. Like all Michigans, units are fully hydraulic, only cable is short length, yoke to apron.

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TG 5825

. . . Azores runway

rock with vertical fissures of softer, unsuitable material.

This meant that selective quarrying had to be followed so that only hard volcanic rock would be processed. Still, variations in the aggregate made it necessary to run daily tests and constantly adjust the concrete mix. Sand for the concrete was manufactured since there was no natural sand on the island.

• **Joints**—No random cracking of the pavement occurred. This was due to the effectiveness of a relatively new type of construction joint placed every 25 ft on the 25-ft-wide lanes.

Sequence of joint construction:

A "T" bar machine vibrated a rock-free slot in the just-placed pavement. Into the slots went ¼-in.-thick filler strips of asphalt-impregnated cane fiber. They were placed almost flush with the surface and covered by the finishing operations. The joint positions were marked for later location.

The joint was sawed and cleaned after the seventh day. Sawing was done with a carborundum blade. Then the joint was filled with a joint-sealing compound.

This type of operation proved faster and more economical since the cut was made through fiber instead of concrete. Sawing with a diamond blade after the concrete had set was tried but didn't work. It tore out the hard volcanic aggregate instead of making a clean-cut groove. And when wet-sawing was tried, severe cavitation occurred due to the slow-setting cement.

Even with these off-beat problems and solutions, the paving went at a fast clip. Concrete placement often reached 2,000 cu yd a day; maximum placement was 2,208 cu yd with two pavers on the paving train.

American personnel did all supervisory work. And local labor quickly learned machine operation; one Portuguese mixer-operator produced 600 batches of concrete in a 10 hour day, compared with 800 batches for the long-experienced American operator.

The airfield was built as a standby facility for the U. S. Air Force. Corps of Engineers, Eastern Ocean District, acted as construction agent. The Santa Maria Residence Corps of Engineers was represented by Maj. E. R. Day.

Design engineer for the project was Seelye, Stevenson, Value & Knecht, New York City.

Prime contractor was a joint-venture made up of Oman Construction Co., Inc., Nashville; R. P. Farnsworth & Co., Inc., New Orleans; and Wright Contracting Co., Columbus, Ga. The contractor organization was headed by R. W. Walton; G. J. Stillson was project engineer.

Traction and mobility bring major economies to well-known paving firm

Save $50,000 investment — and $4 per hour

This Michigan Tractor Shovel—one of 11 owned by Texas Bitulithic Company, Dallas—has, *by itself*, saved a $50,000 investment *plus*, in most cases, $4 per operating hour.

It alone has replaced a three-unit fleet common to many paving operations. Namely, a 130-plus hp crawler formerly used to pull a big 10,000 lb, 24-30 ft strikeoff planer—*and* another 130 hp crawler and matching scraper used to supply and remove gravel ahead of the planer. "Duplication of these three machines, which were moved to another job, would have cost us $75,000," says L. A. Armstrong, Texas Bitulithic assistant secretary-treasurer. "Their operation would require one more man and $4 per hour more actual operating costs (not counting depreciation, etc)."

Instead, the $24,000, 133 hp, 26,500 lb Model 175A Michigan does both towing and gravel supply-removal jobs.

Torque converter smooths towing operation

On towing operation, Michigan dependability and tractive ability have probably been the most important factors. Machine has four-wheel-drive, weighs 26,500 lbs, so has no trouble pulling the big two-lane planer. Its torque converter drive has virtually eliminated wheel spin, so holes in the sub-grade are no longer a worry. Operator has excellent view of leveler blade, and Michigan's power steer gives the instant fingertip control so necessary to towing any planer. And the dependable Michigan has lost no assigned work-time—so Texas Bitulithic's paving crew has never needed to slow down due to insufficient crowning.

25 mph speeds gravel supply task

On gravel handling, mobility is probably the key factor in Michigan's success. For example, every time material piles high ahead of the planer, the Michigan operator simply stops his machine, detaches a drawbar pin, and drops the planer yoke. In a few minutes, excess material has been Michigan-handled: cast aside or truck-loaded. Similarly, when more material is needed, the 25 mph Michigan runs down the sub-grade to a break in the forms, scoops up a 2¼ yard load, and hurries back. Re-attachment to the big planer takes one man (the Michigan operator) only a few minutes, and planing continues.

Ten other Michigans do varied jobs for pipe, dirt, paving crews

Elsewhere, Texas Bitulithic Company continues to make good use of their *10 other Michigans* (all 80 hp, 1¼ yd Model 75A's). "We run 25 to 30 jobs at a time," explains Equipment Supt R. H. Arnold, "do $15,000,000 to $20,000,000 worth of earthmoving, bridge work, concrete and asphalt paving per year. We put one 75A on each major job . . . shuttle our other Michigans, under their own power, between two to five smaller jobs each. Tasks include hauling concrete from mixers to pour sites. Carrying pipe. Truck-loading sand, gravel and dirt. Leveling parking lots. And many, many others."

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Construction Machinery Division

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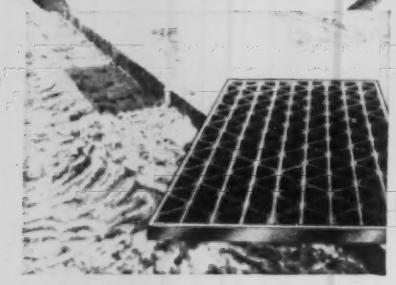
FLOODED HIGHWAYS HINDER TRAFFIC



OLD heavy cast iron draingrates, averaging at best 40% clear opening, often fail to carry off rain water fast enough during heavy downpours, resulting in flooded highways—particularly at underpasses. Also, cracked draingrates must be replaced.

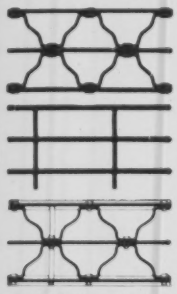
With open steel mesh draingrates, larger clear openings reduce the likelihood of flooded highways considerably. Irving "Dryway" Draingrates are 75% open for greater drainage and are made of steel bars on edge, not subject to cracking.

Available in three basic designs:

Riveted

Pressure-Locked

RI-6



Write for brochure on "Dryway" Draingrates
Self-maintaining, Lightweght, Economical, Safe

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IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
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1863 10th St., OAKLAND 23, CALIFORNIA

New Products

Tong Works Automatically On Steel Sheetpiling

An automatic materials handling tong lifts and deposits steel sheetpiling within limited or crowded stock areas, according to the manufacturer.

Made of heat-treated alloy steel, it weighs 125 lb and has a capacity of 2,000 lb. It handles three different piling shapes, USS Nos. MP112, MP113 and MP116 or equal, in bay areas with as little as 6 in. space for leeway. The hook takes on single length piling up to 60 ft.

The tong connects with the center of the piling when lowered in its locked position. Resting on the piling, it unlocks automatically and grips the load securely. The heavier the load, the tighter the grip. After a piece of piling is lifted and deposited, the tong returns to its locked-open position. American Forge & Manufacturing Co., McKees Rocks, Pa.

Rubber-Tire Shovel Crane Has Improved Steering

A 30-ton 8 x 4 crane, the MC-430, has been added to the Thew Shovel Co. line of rubber-tire shovel cranes. The carrier has a rocker beam mounted front bogie that doubles the front axle carrying capacity. This type of construction is said to give improved steering because the additional weight of the front end increases the load and steerage on the steering wheels.

The crane has 8-wheel brakes, 15 forward speeds to 47 mph, hydraulic power-assist steering, high traction differentials and through drive that delivers engine torque to the axle having the tractive ability.

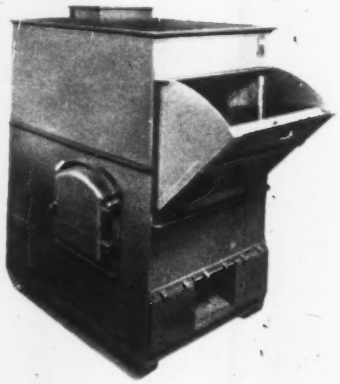
A power-operated folding mast gantry lowers below cab height. The boom is of square-tubular-chord design. Thew Shovel Co., Lorain, Ohio.

Portable Spray Machine Works With Larger Unit

A portable spraying machine is designed to work in conjunction with a large sprayer in applying curing membrane to freshly poured concrete. It is used in areas where the large spray cannot operate.

The portable unit is said to be useful for short runs of pavement, highway cloverleafs and side edge spraying after forms are removed. The machine can also be used for oiling forms. It has a 15-gal tank. Power is provided by a 2¼-hp engine with a self-rewind rope starter.

The developed pressure, greater than needed for spraying, provides overflow pressure that goes through a by-pass system to keep the membrane constantly agitated while the machine is in operation. Champion Manufacturing Co., 3700 Forest Park Ave., St. Louis 8, Mo.



Movable Incinerator Can Handle Low Waste Needs

A new incinerator, skid mounted to ease location changes, is designed to burn an average of 75 lb per hour of dry waste. The unit can operate for eight hours a day at rated capacity, claims the manufacturer.

The incinerator is steel cased and refractory lined at the factory and is ready for operation when connected to stack or breeching. It measures 4 ft 4 in. long, 2 ft 10 in. wide and 5 ft high.

A 24x20-in. hopper-type charging door is suitable for small loose refuse. Portable Incinerator Co., Peerless Co., 1800 N. Kingsbury St., Chicago 14, Ill.

(New Products continued p. 53)

NOW! Plan your building in color with new Alcoa Alumalure!

Alcoa adds low-cost color to the benefits of building with aluminum. New Alcoa* Alumalure lets you choose from 11 standard colors of baked enamel on aluminum building sheet. Along with aluminum's traditional advantages—light weight, corrosion resistance and economy—you'll gain the exciting appeal of color that transforms any building into a showplace. Be among the first to get the facts on Alumalure*, Alcoa's latest contribution to architecture. A telephone call to your local Alcoa sales office will bring you complete information.

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Specify Alumalure!

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Gulf men on the job. Gulf Sales Representative Frank Jones (left) and Gulf Distributor W. C. Jarman Jr., (right), check fuel requirements with Ray Hooks (center), Grading Superintendent of Hugh Steele, Inc.

Speeds 18-mile grading and paving job with Gulf fuels and

GULF MAKES THINGS

"On this job, we're moving over 3,000,000 yards of earth, paving 18 miles of roadway and building the approaches for 17 bridges, including 2 underpasses. Gulf Dieselect fuel and dependable Gulf service really help us meet our tight schedule."

That's the word from Ray Hooks, Grading Superintendent of Hugh Steele, Inc., Center, Alabama. The Steele contract covers work on Highway No. 75 in Turner County, Georgia, and their section is one of the largest current projects in the United States.

"In our 42 pieces of earth-moving equipment," reports Mr. Hooks, "we have at least 250 fuel injectors. So it sure pays us big dividends to use a clean-burning fuel to protect them and avoid costly down-time. We find that with Gulf Dieselect fuel our fuel injectors stay unusually clean and free from harmful deposits."

on-the-job Gulf service . . .

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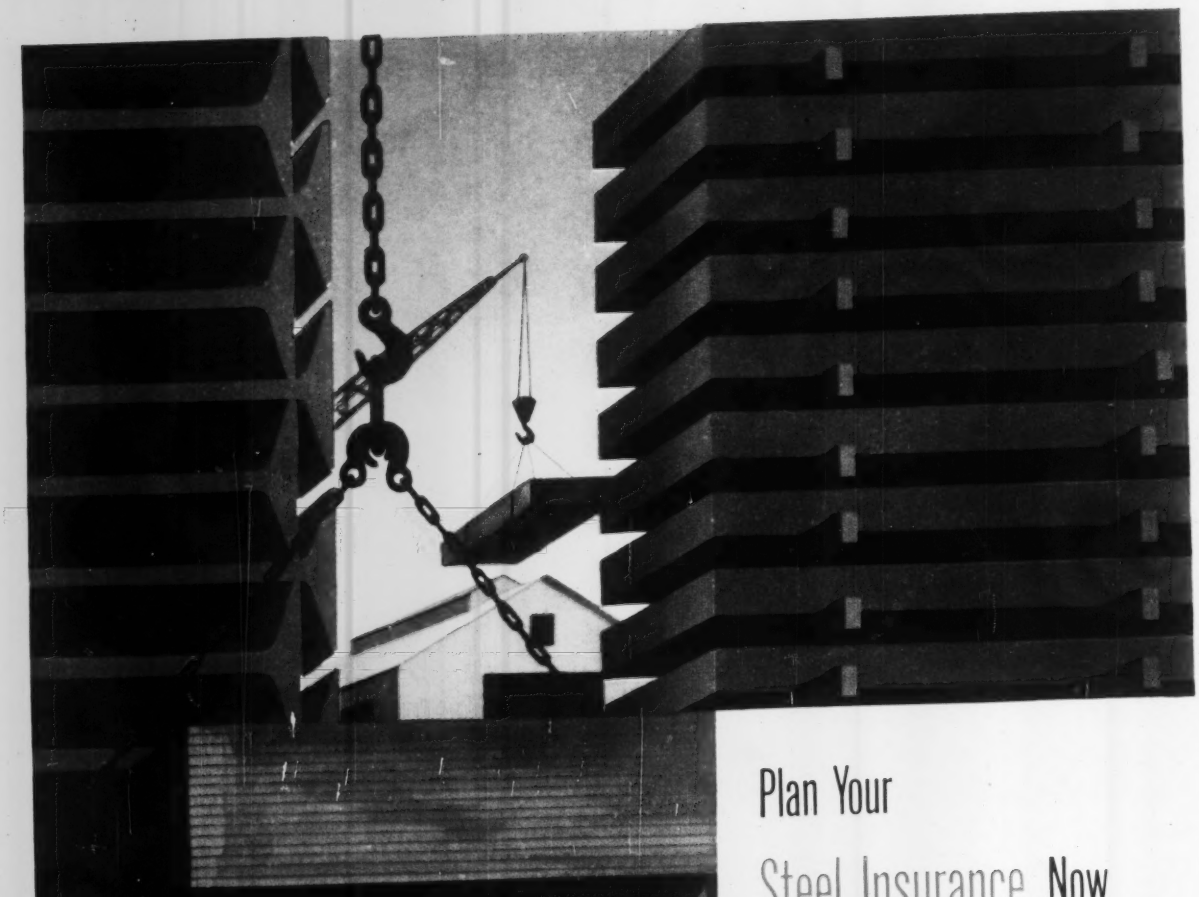

Plan Your

Steel Insurance Now

With steel supply tightening up again and the possibility of a real scarcity in the months to come, it's nice to have your orders for plain and fabricated steel in the hands of a reliable and well-supplied organization.

Steel buyers everywhere know Levinson's reputation for having steel on hand . . . and for "fabrication that fits."

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the LEVINSON STEEL COMPANY

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Fast Assembling Scaffold Includes a Workbench

This three piece scaffold can be erected by one man in a minute, the manufacturer claims.

"Wings" that attach easily to the corner posts add convenient bench area at any working height. Five-in.-dia locking casters are standard on all models. Platforms, with welded X frames, exceed 4100 lb per sq ft test loading. DAVIS SCAFFOLDING COMPANY, LANSON, WISC.

Automatic Locking Lever Built Into Plate Handler

A combination plate handler and sling hook has a plate-lifting capacity of 3,000 lb and a working load limit of 17,000 lb. Forged from alloy steel, it has a minimum tensile strength of 140,000 psi.

The hook is called the Lev-R-Lok. The plate clamping device is always in position for rapid, safe moving of sheet steel, beams, plates or irregular shapes. When the load is lifted, the locking lever engages automatically. INTERSTATE DROP FORGE CO., SPECIAL PRODUCTS DIVISION, 4089 N. 27TH ST., MILWAUKEE 16, WIS.

Late Model Lift Loader Can Lift Two Tons 30 Feet

An improved model of the Lull Engineering high lift loader lifts 4,000 lb up to 30 ft.

Called the 7-B, it has a stronger telescopic tower yoke. Its driving axles and housings are heavily trussed and braced and positioned farther out into the traction wheels to provide greater stability.

Latest attachments for the lift loader are a telescopic boom that can be hydraulically extended or retracted from 13 ft to 8 ft; a hydraulically controlled winch; and a hydraulically controlled concrete dumping bucket. LULL ENGINEERING CO., 3045 HIGHWAY 13, ST. PAUL, MINN.

Style 60 Clamps for reinforcement of calked joints
Style 53 Cast Couplings for permanent, bottle-tight joints
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Getting this water supply main over the stream bed was made fast and simple by using plain end cast iron pipe, Dresser Couplings and Dresser Bell-Joint Clamps to reinforce the calked joints at the fittings. The whole job was accomplished in about one working day. Available random lengths of pipe were used in the crossing.

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Photo by Bearimo Studio

8" Transite Sewer Pipe being installed, Winchester, Mass.

"Transite Sewer Pipe gives us the maintenance-free results we want... no root trouble, no infiltration, and no breakage in service."

...says James D. Halwarz
Superintendent of Water and Sewer Dept., Winchester, Mass.

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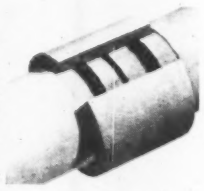
Each year, in every part of the nation, we see significant increases in the use of Transite® Sewer Pipe. To find out why, send for the new Sewer Pipe data kit—containing flow rates, new Transite crushing strengths, and TR-165, the informative brochure on Transite Sewer Pipe, its application and installation. Write, today, to Johns-Manville, Box 14EN, New York 16, N.Y. In Canada, Port Credit, Ontario.



Transite Ring-Tite® Coupling . . . tight, lasting seal against roots and infiltration of ground water.

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Grand Central City's Wolfson: The man with . . .

A 'Sixth Sense' for Construction

Erwin S. Wolfson has been described as the man with a "sixth sense" for construction. He will have an opportunity to prove it this fall when his company begins building Grand Central City—the second-largest privately-owned office building in the world.

The $100-million, 55-story skyscraper will rise on one of the most strategic and expensive sites in New York City. It will straddle the railroad tracks at Grand Central Station in midtown Manhattan. (ENR, Dec. 26, p. 25).

Shaped like an elongated octagon, the building will provide 2.4 million sq ft of rental space. Its size tops both the RCA building, with 2.3 million sq ft, and the Empire State building, with 2.3 million sq ft. It will be surpassed only by the Merchandise Mart, Chicago, which has 4 million sq ft.

Grand Central City is the high point to date in Erwin S. Wolfson's career in real estate and construction. As promoter, contractor and building owner, 37-year-old Mr. Wolfson has been one of the most active men in New York City's post-war construction boom.

He is principal owner of Diesel Construction Co.—a general contracting firm that last year signed contracts for $155 million worth of building construction. (This includes the contract for Grand Central City.)

He is owner of three post-war Manhattan office buildings constructed by Diesel.

And he is part owner of five other building as a partner in the Clarson Co., a building investment firm.

"What distinguishes Erwin," comments an associate, "is that first, he is an able builder whose firm has a high reputation for technical competence. Second, he has an acute business sense that guides him to successful projects. Third, and most important, his word is as good as his bond; he's a contractor and manager you can trust and, so he makes you want to do business with him."

• **Early training**—A lemonade stand in Cincinnati, where his father was a trousers manufacturer, marked Mr. Wolfson's beginnings as an entrepreneur.

But lemonade held limited horizons, so young Erwin looked to engineering. After one year of engineering study at the University of Cincinnati, he found he couldn't build radio sets as he had hoped. Going to the other extreme, he immersed himself in liberal arts, particularly foreign affairs and philosophy. He planned to become a teacher.

After graduation, however, he vacationed in Florida and got caught up in the real estate craze. The year was 1924. Mr. Wolfson bought two lots for $500, built a small house for $6,500 and sold the works for $20,000. He continued to dabble in the real estate market and the teaching career vanished. His young fortune vanished two years later when the Florida land market collapsed.

Mr. Wolfson then decided to try New York, starting as assistant to an assistant time-keeper on a skyscraper project. During the next eight years, he rose within the Abe Adelson organization, where he became an officer and director.

In 1934, together with Saul Lautenberg, another Adelson associate, Mr. Wolfson formed the Diesel Electric Corp. The two men had hit upon the idea of selling private power plants to depression-hit manufacturers, thereby saving them the cost of buying electricity from a utility company. They acted as general contractors installing these power plants.

In 1937 mortgage money opened up. The two men turned again to the idea of building and changed the company name to Diesel Construction Co. They bought land and erected two Manhattan apartment buildings. Soon they began getting contracts from outsiders to do alteration jobs. Then the war years brought them government contracts.

With New York's post-war building boom, Diesel jumped into the bidding

"Get land that's a natural . . ."

"Building codes are archaic . . ."

"More than brick and mortar . . ."

"Ask my tenants . . ."

for office-building contracts. In 1946 Mr. Wolfson and Mr. Lautenberg erected their own building, the first postwar office structure to use a peripheral system of year-round air conditioning. After 1946, the company built 15 office structures, several motion picture, radio and TV studios, apartment buildings, laboratories and specialty buildings.

When Mr. Lautenberg died in 1952, Mr. Wolfson bought out his estate.

• **How he operates**—Mr. Wolfson's success began to attract big-name tenants, who requested that he build structures in which they could rent space. That's how he became an active owner-builder as well as contractor.

A prospective tenant generally tells him how much space he wishes to occupy and gives some idea of his future needs. Often the tenant will designate a desirable locality. With these ideas in mind, builder Wolfson looks around for a plot that he calls a "natural."

A "natural," he explains, "is a piece of land that's available, that's suitably located and that carries the right price."

If the right land is found and the proposed building sounds like a good investment, Mr. Wolfson brings in an architect, arranges financing and begins the long procedure of designing for his needs and bargaining with prospective tenants for the best terms.

About owner Wolfson's bargaining techniques, one tenant says, "Erwin is very shrewd concerning what's good for himself. Yet we have never had a difference that, once resolved, was not equally in our favor."

"Erwin is easy to get along with," says another tenant. "He puts his cards on the table and so do you. You shuffle them around for a while and then come up with an amicable solution."

Mr. Wolfson finds building for himself a different kind of proposition from general contracting. "Being a contractor," he explained, "doesn't give you the experience necessary for judging what makes a successful building venture. It takes a thorough knowledge of the finance market and of the renting market.

"You can build a wonderful structure brick-and-mortarwise, but," he advised, "if you haven't the tenants to fill it, you'll have an empty monument. A builder who wants to do speculative or investment building for himself must be very careful."

The Wolfson experience as owner gives him an added advantage when his firm serves as a general contractor for someone else. He and Carl A. Morse, president of Diesel Construction Corp., study the plans together as if it were their own building. After estimating costs, they try to find ways the investor can erect a better building for the same money, or the same building for less.

• **Behind the scenes**—Grand Central City is his latest and biggest achievement as an owner-builder.

The story behind this building goes back to 1954, a prosperous time in New York construction. Mr. Wolfson then was eyeing the Grand Central property. He spelled out his plans to the late Robert Young, who was waging a proxy fight for control of the New York Central System. Mr. Young promised that if he won his fight, Mr. Wolfson could lease the property.

Plans were accordingly drawn up, and Mr. Wolfson agreed to lease the property along with three investors, Herbert and Stuart Schettel and Alfred G. Burger. But when another investor became interested in building on the same spot, negotiations broke down. For four years nothing was done with the Grand Central plot. In 1958 negotiations were reopened and the three investors and Mr. Wolfson signed an 80-year lease for the property.

The wheels started rolling. The 1954 plans designed by Emery Roth & Sons were brought back and Walter Gropius and Pietro Belluschi were called in as consulting architects. With 25% of its space already rented, Grand Central City is scheduled to open in 1962.

• **Builder as landlord**—Throughout the field Mr. Wolfson is praised for his willingness to accommodate tenants. He tells the story of a prospective prestige tenant who considered renting a large amount of space in his 100 Church St. structure, which contains 700 million sq ft of rentable space. The prospect, a long-established and conservative organization, was dubious about the merits of the building and about the landlord. So Mr. Wolfson gave the company a list of buildings he erected and owns and gave them carte blanche to visit any tenant. After a few

inquiries, the prospect's board of directors voted to sign a 21-year lease.

Of himself as a landlord, Mr. Wolfson confides that he drives as good a bargain as any other landlord and that he is inclined to interpret a contract in the strictest terms. "Yet," he continues, "my tenants and I are going to live together for 30, perhaps 40 or 50 years, and I want to make it as pleasant as possible." Mr. Wolfson has never lost a tenant because of conflict.

Unlike many other owners, this one manages his own buildings. He has established the Wolfson Management Corp., as the management arm of his investment-building operation; he uses agents only for the initial renting process. Once the building is rented the agent steps out and management's corporation takes over.

• **Work and play**—Mr. Wolfson carries on his business in modern comfortable quarters at 24 West 58th St., a building he erected and owns. He holds his business meetings in a private apartment behind the office. He finds such an atmosphere more "conducive" to "brainstorming."

When his business day is over, he commutes 30 miles to his wife, children and home in Purchase, N. Y.

An avid horseman, he maintains private stables and rides every weekend regardless of weather. He also finds time to enjoy swimming, tennis and the books in his extensive library.

His extracurricular activities run the gamut from scholarly studies, to improvement of building conditions, to charity work.

• **Future plans**—As to the future, Mr. Wolfson says that "getting Grand Central City opened up and living with it will take most of my time for the next few years." As general contractor, however, Diesel Construction Co. will start work on $172 million of new construction this year.

Concerning current construction methods, Mr. Wolfson believes that builders could be doing a better job. Construction techniques, he says, have not improved with the times.

"When I started 50 years ago, they were doing things the same way they're doing them today." Mr. Wolfson blames this on building codes, which he thinks are "archaic and add immeasurably to building costs." He asserted that if cities are to develop really artistic and functional buildings, the codes must be changed and it is up to the builders and architects to do it.

"With revamped building codes," Erwin Wolfson wistfully adds, "we could really be building."

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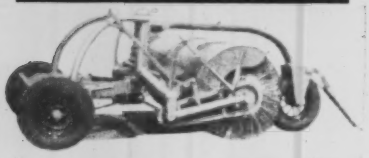

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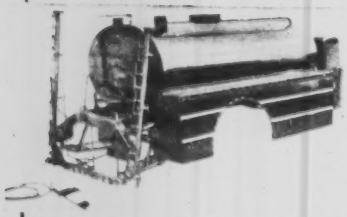
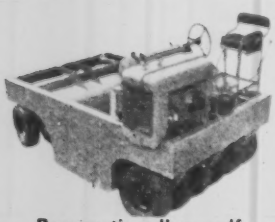


Asphalt Distributors



Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.
6015 S. Lamar St., Dallas, Texas

Long prestressed span alternate takes . . .

Lavaca Bay Causeway Job

Four alternate plans drew 12 bids for this 2.252 mile causeway across Lavaca Bay in Calhoun County, Tex.

The award at $4,163,717 to Elmer C. Gardner, Inc., Houston, by the State Highway Department, Austin, was 30.6% below the engineer's estimate. It was the only bid submitted on the alternate which uses 60-ft precast prestressed concrete spans with 20-in. square precast concrete foundation piling. W. A. King, Victoria, Tex., is the engineer.

Almost 51% of the contract goes into the 194 60-ft precast prestressed concrete spans at $10,900 each. An additional 24.3% is accounted for by the 20-in. square precast concrete foundation piling—168,634 lin ft at $6 a ft. Bridge approaches are included in the contract.

Three alternate superstructure plans were each paired off with alternates on regular 20-in. square precast concrete foundation piling or special 54-in round prestressed concrete piles.

The base bid, which drew seven of the twelve bids and prices ranging from $4,823,136 to $5,790,312, called for regular foundations and for superstructure 40-ft slab and girder spans. No bids came in on the foundation alternate for this superstructure.

The first alternate, which called for a 60-ft prestressed concrete beam span with regular foundations, drew three bids ranging from $4,922,718 to the high of $6,056,955. There were no bids here on the alternate foundation choice.

The winning structure alternate that drew the $4,163,717 low bid was based on regular foundations for a 60-ft precast prestressed span. Another contractor bidding for this structure and the alternate foundation came in at $5,439,434.

The bridge is 60 ft wide, with two 26-ft roadways separated by a 6-ft median, and one 2-ft sidewalk. It is 11,901.5 ft long. Height above high water is minus 8 ft, estimated hurricane. Clearance at medium tide is 45 ft; above low tide, 46½ ft.

Minimum wages include: structural iron worker, $2.00; concrete finisher, $1.75; pile driver, $1.75; crane & shovel operator, $2.00; common laborer, $1.00.

The bidding included:

1C Elmer C. Gardner, Inc., Houston	$4,163,717b
2 Austin Bridge Co., Dallas	4,823,136a
9 T. L. James, & Co., Ruston, La., and Brown & Root, Houston	5,439,434c
12 F. M. Reeves & Sons, Houston, and San Jacinto Equip. Co., Bellaire, Tex.	6,056,955d
EE W. A. King, Victoria, Tex.	6,000,000

a Base bid 40-ft slab & girder spans, regular fndns.
b Alt. 60-ft prest. prestr spans, regular fndns.
c Alt. 60-ft prest. prestr. conc spans, alternate fndns.
d Alt. 60-ft prestr conc beam spans, regular fndns.

Bids: 2 12 59 Items	Unit	60' Prest. Prestr Spans, Square Piles Quantity	Unit Prices 1C	40' Slab & Girder Spans, Square Piles Quantity	Unit Prices 2	60' Prest. Prestr Spans, Round Piles Quantity	Unit Prices 9	60' Prestr Conc Beam Spans, Square Piles Quantity	Unit Prices 12
Exc, uncl struct	cy	218	$50.00	196	$50.00	274	$9.75	218	$5.00
Conc, cl A, substruct	cy	10,487.6	30.00	11,965.8	40.75	8,018.4	68.00	10,482.8	50.00
slabs	cy	376.5	50.00	376.5	40.75	376.5	90.00	20,029	75.55
slab & girder	cy			36,144.8	40.75				
seal	cy	136.6	30.00	136.6	33.00	163.2	136.50	136.6	25.00
Steel, reinforcing	lb	1,438,780	0.11	7,513,211	0.106	129,098	0.11	5,165,262	0.13
structural	lb	378,250	0.18	401,254	0.178	378,250	0.25	904,510	0.33
Tr timber, 12" creo	Mfbm	15,168	700.00	15,168	450.00	15,168	550.00	15,168	650.00
pile, 16" creo	lf	8,430	3.00	8,430	3.70	8,430	3.25	8,430	4.00
Sq prest conc pile, 20"	lf	168,634	6.00	206,147	7.80			168,634	10.00
prestr T pile, 20"	lf	2,247	10.00	2,190	15.50			2,247	16.00
Round prestr conc pile, 54"	lf					77,525	22.50		
T pile, 54"	lf					2,457	38.00		
Test load set up	ea	4	4,000	4	3,300	4	6,760	4	4,000
Sheet steel piling	sf	52,000	3.50	52,000	3.40	52,000	4.10	52,000	3.50
Prest. prestr span, 60'	ea	194	10,900			194	12,300		
Prestr conc beams, 48"	lf							91,956	13.00
Alum rail, type T	lf	23,800	3.00	23,800	3.10	23,800	3.15	23,800	5.00
rigid conduit, 1½"	lf	7,030	1.50	7,030	1.50	7,030	2.20	7,030	1.50
Navigation lights	ls	job	6,000	job	11,000	job	5,500	job	10,000

Comnce: 2 24 59. Completion schedule: 730 cal days. Liquidated damages: $75 day.

Trusses Skewed for Rhode Island Bridge

Consolidated Builders, Inc., No. Attleboro, Mass., was the successful bidder at $252,617 for this River Street bridge over the Blackstone River in Woonsocket, R. I.

The award by the Dept. of Finance, Purchase Div., Woonsocket, was less than 2% under the second bid, but 29% under the engineer's estimate and the high of the nine bids. Fay, Spofford & Thorndike, Inc., Boston, is the consultant.

The bridge will be 200 ft long, center to center of bearings, with Warren

truss spans skewed at 25½°. Width of bridge is 52 ft, 6 in., center to center of trusses. Gross height of abutments is 29 ft.

Concrete must contain a minimum of 602 lb of cement per cu yd.

The contractor furnishes all materials. The railroad is one-quarter mile from the site.

The nine bids on this bridge included:

1C	Consolidated Builders, Inc., No. Attleboro, Mass.	$252,617
2	Halloran Constr. Co., Providence, R. I.	256,685
9	Builders Iron Works, Somerville, Mass.	357,354
EE	Fay, Spofford & Thorndike, Inc., Boston	358,000

Bids: 2-16-59 Items	Unit	Quantity	Unit Prices 1C	 2
Excavation, uncl.	cy	220	$2.50	$1.50
trench earth	cy	65	3.50	2.50
Sel borrow, outside loc	cy	450	1.00	1.00
Grav fndn, type A, 12"	cy	470	1.25	2.00
Base course, crushed stone	t	400	3.50	2.50
sand filler	cy	60	2.50	1.75
Asph conc pave, hot mix cl I, tp 1-1, 3"	sy	1,370	1.65	1.30
Bit mat, MC-0 fhh&a	gal	685	0.30	0.20
VCP, 12" furn&lay	lf	20	3.00	4.00
18" furn&lay	lf	40	5.00	6.00
Catch basin constr	ea	1	200.00	250.00
reconstr	ea	1	150.00	125.00
Granite curb, straight r&r	lf	645	1.75	1.00
corner curb r&r	ea	6	10.00	4.00
Bit conc sidewalk, cl 1, with foundation	sy	110	3.50	2.00
Gravel sidewalk	sy	270	1.00	1.00
Stl bm guard rail, cip	lf	275	5.00	3.00
Excavation, struct, uncl	cy	2,130	3.00	3.00
masonry	cy	100	10.00	10.00
Stl sht pile, left in pl.	sf	3,300	2.70	4.00
Conc, structural, cl Y footings	cy	425	25.00	30.00
abuts & walls above ftgs.	cy	610	25.00	40.00
Conc, structural, cl A abuts & walls above ftgs.	cy	75	75.00	80.00
decks & walks	cy	335	60.00	60.00
Steel, reinf bars	lb	76,500	0.13	0.11
struct, incl trusses, floor sys & rail, compl, fe&p	ls	job	161,000.00	158,500
Cr stn for abut drainage	cy	25	7.00	5.00
Riprap remov&repl	sy	300	2.00	1.00

fhh Furnish, heat, haul & apply fe&p Furnish, erect & paint cip Complete in place r&r Remove & reset

Commence: 6-15-59 Complete: 11-30-59
Liquidated damages: $50/day

Winchester, Ky. Pays $7,756/Ton for Incinerator

Two contracts for a 50-ton daily capacity garbage incinerator for Winchester, Ky., total $232,674, or $7,756/ton, split 41.3% for the building, 58.7% for equipment. This is 7% under the engineer's estimate. M. Gibson Taylor, Winchester, is the consulting engineer.

The two contractors are:

Contract	Amount
Robert D. Short, Lexington, Ky. Incinerator building	$96,174
American Incinerator Co., Detroit, Mich. Incinerator equipment	136,500

The incinerator building is 94 ft x 52 ft, and 32 ft 8 in. high. Equipment consists of two units, with a capacity of two tons per hour each.

Prevailing wages range from a high of $2.00 for skilled, through $1.50 for semi-skilled, through $1.25 for common laborers.

Work commenced April 20 and must be completed within 240 calendar days.

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for Kimbell Food Products Co. Fort Worth, Texas

Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

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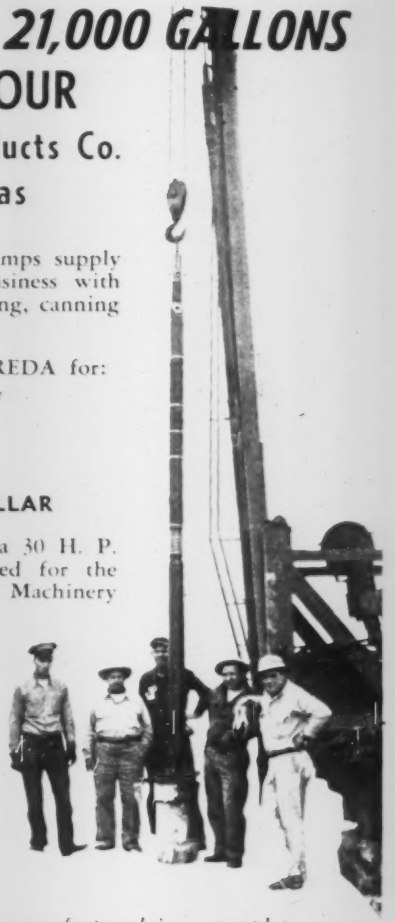
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.



INSTALLATION DATA
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a.c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

Reda Submergible Pumps are manufactured in a complete range of sizes from ½ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

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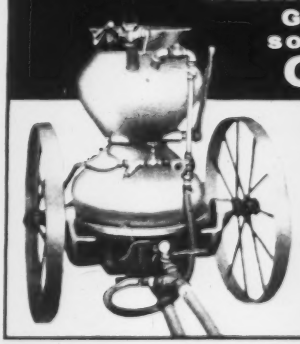

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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate, Ready mixed Concrete, Asphalt: Last, May 7; Next, Jun. 4.
- Iron and Steel Products, pipe: Last, May 14; Next, Jun. 11.
- Wood Products, Glass, Explosives, Chemicals: Last, May 21; Next, Jun. 18.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION SCORED Per M, lots of 2,000 pieces or over, 3x12x12 In.	4x12x12 In.	8x12x12 In.	STRUCTURAL CLAY TILE LOAD BEARING SCORED Per M, lots of 2,000 pieces or over, 8x12x12 In.	10x12x12 In.	12x12x12 In.	BRICK Per M, In quantity Common backing	Straight hard	LIME Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta	$170.10*e	$153.25*kk*e	$306.55*e	$344.85*e			$31.50*p	$33.75*p	$36.50*hh	$28.50*hh	$28.50*hh
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.60	23.20	
Birmingham	135.00*ss	152.00*ss		303.00*p	376.00*p	465.00*p	27.00*ff	38.00*jj	35.02*mm	22.30*mm	26.33*gmm
Boston	232.00*fmm	248.00*mm	463.25*mm	556.00*mm			41.50*p	56.50*p	46.20*ff	32.20*ff	
Chicago	132.00*ll	149.00*ll	280.00*ll				30.00	32.00	38.00*ll	35.20*ll	
Cincinnati	160.00*mm*rR	172.00*mm*rR	327.00*ddmm*R	390.00*mm*rR	425.00*mm*rR	500.00*mm*rR	48.75*k	47.00*k	28.00*mm	24.50*mm	28.00*mm
Cleveland	200.00*tt	213.00*tt		453.00*tt			40.00*tt	43.00*ggtt	32.75*ptt	28.00*ptt	
Dallas	152.00	152.00	300.00	364.50	446.25	552.50	27.50	49.00	41.80	24.58	28.50
Denver				310.00	390.00	442.00	30.00*mm	49.50*mm	48.00*pmm	42.00*pmm	46.00*pmm
Detroit	242.00*mm	258.00*mm	483.00*mm	548.00*mm	723.00*mm	827.00*mm	51.50*pmm	48.00*pmm	38.00*mm	30.00*mm	40.00*mm
Kansas City	158.00*mm	158.00*mm	312.00*mm	312.00*mm	400.00*mm	500.00*mm	34.00*mm	34.00*mm	36.26	34.26	29.76
Los Angeles	r	r	r	r	r	r	35.00*rr		38.00*mll	38.00*mll	39.00*mll
Minneapolis	192.00*pe	215.00*pe	437.00*pe	215.00*pze			45.60*ye	54.00*ype	49.00*bbe	38.00*bbe	52.00*bbde
Montreal	168.75*auqpo	180.93*auqpo	325.00*auqpo	270.00*qoo	400.00*qoo		48.25*bll	56.30*bll	39.00	22.00	13.25
New Orleans	186.00	186.00	380.00	380.00			42.00	55.00	44.00	32.00	32.00
New York	177.00*h	189.00*h	283.00*h	285.00*hn			44.00*p		50.00*pR	40.00*pR	
Philadelphia	169.00*mm	180.20*mm	337.90*mm	405.00*mm			30.34*mm	38.42*mm	27.60*mm	25.60*mm	3.17*mmm
Pittsburgh	200.00*t	213.00*t	400.00*t	453.00*t	607.00*t	693.00*t	39.00*t	46.00*t	38.00*t	33.00*t	34.00*t
St. Louis	180.00*mmpp	190.00*pp	385.00*pp	401.00*ppp	459.00*pp	621.50*pp	44.00*mmpp	45.50*pp	1.00*aapp	80*aapp	1.35*aapp
San Francisco	156.45*mm	177.10*mm	235.30*dd*mm	159.40*qqmm			43.00*mm	43.00*mm	29.24mm	29.24mm	31.74mm
Seattle	235.00*pt	270.00*pt	490.00*pt	265.00*pct			48.00*t	62.00*t	52.00*bbt	38.00*bbt	4.50*mbbt
Toronto	158.00*rr	173.00*rr	336.00*rr	263.00*rr	378.00*rr		35.00*rr	63.00*rr	37.00*mm	34.50*mm	32.50*mm

*$ F.o.b. yard. **F.o.b. plant Stockton. *† F.o.b. yard Roxbury. *a Smooth. *b Chi common. *g Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *h $4.50 del. *i 8 x 12 x 12 in.-6 cell. *l Pulverized hot. *n less 5% disc., 10th., 180 lb. processed. *o 7⅝ x 7⅝ x 12. *p Mason's double hydrated pressure. *q Truck lots. *s Provincial and Municipal tax extra (6%). *v Not used; earthquake danger. *w 8 x 16 x 12. *x less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *ff 80% common. *gg Smooth. *hh less 25¢ disc., cash. *ii F.o.b. plant. *jj rough; smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 5½ x 11½. *rr 2½% disc., 10 days. *ss 5% disc., 10 days. *tt less 2% disc., 15th. *uu less 50¢ M; 10 days. *vv 4000 pcs. and over. *R revised. ≠ eff. 3 1 59.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. In 600 lb. (Approx. bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. In 100 lb. cases in oil	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum c	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$11.75*gg*ff	$23.00*gg*	$3.59	$3.86	$3.31	$2.35*kk	$2.15*kk	$2.62*kk	$0.67*kk*	$57.75*kk
Baltimore	17.50*pp	23.00	3.00	4.40	3.50	2.78	4.25	4.25	.48	.54.75*R
Birmingham	26.00*ff*k	29.00*ff	3.90*J	3.40*J	....	3.30*mm	2.45*ff*mm	2.45*ff*mm	.82*ffmm	45.00*eemm
Boston	24.95*mmm	26.90*mm	....	....	....	3.91*q	2.64*q	2.83*p	.50*q	.58.00*p
Chicago	15.25*rJ*qqpp	23.00*ff*J	....	....	....	4.10*kkk	3.30*kkk	3.32*kkk	48.00*bbkkk	57.70*kk
Cincinnati	15.25*ff*l	23.00*ff*J	....	....	....	3.14*mm	2.30*mm	2.42*mm	.42*symm	55.96*Hmm
Cleveland	25.65*t	26.90*tt	2.46*gg	3.53*gg	3.06*gg	3.29*q	2.30*o	2.42*o	.434*y	49.00*gg
Dallas	22.50	23.50*M	....	3.25*ff	....	3.00*u	3.00*o	3.00*o	.470	.66.00*hh
Denver	23.00*n	24.00	3.98	5.20	3.70	3.19	2.34*o	2.80*o	.50*ff	.50.00
Detroit	14.75*r	23.00*rr	2.70*mm	3.95*mm	2.70*mm	3.29*mm	2.30*mm*ll	2.42*mm*ll	.56*ffmm	49.00*mm
Kansas City	25.65*ggpp	26.90	3.99	3.43	3.01	4.01*mm	2.92*mm	2.92*mm	.80*y	....
Los Angeles	12.00*l	23.00	3.30*n	4.50*n	4.20*n	3.40*nkk	2.40*nkk	*l	.75*nykk	*l
Minneapolis	16.00*A	29.50*kk	....	....	....	3.28*kk	2.59*kkk	2.42*kkk	.43*skk	.50.00*rkk
Montreal	19.45*l	26.00*ttt	5.52*Dfft	6.55*zfft	5.10*kfft	5.40	4.65*f	4.65*f	1.60	4.40*uu
New Orleans	23.00*Jpp	24.00*J	....	....	....	2.78	1.98	2.85	.680	....
New York	25.65*ss	26.90	....	....	....	3.29	2.16*o	2.45*o	.438*s	49.00*
Philadelphia	28.26*gmm	25.90*mm	3.60*mm	3.40 3.65*mm	3.50 4.00*mm	3.00 3.30	2.50*mm	2.50*mm	.37/.45*mm	48.54*mm
Pittsburgh	21.00*mggJ	23.00*J	2.20*ffJ	2.25*ffJ	2.25*ffJ	3.57*tH	2.75*tH	2.95*H	.48*H	55.00*H
St. Louis	25.65*m	26.90	....	....	....	3.57*mmm	2.63*hh*K	2.85*hh*K	.42*gK	62.00*K
San Francisco	26.70*mm	26.90*mm	3.29*mm	4.30*mm	3.50*mm	2.95*mm	1.97*aammm	3.10*mm	.46*ff	54.00
Seattle	13.75*HH	23.50*ff	....	4.19*ccffJ	....	4.05*peeJ	3.52*peeJ	....	.55*ee	....
Toronto	14.45	19.55	5.15*J	6.18*J	5.95*J	3.90*R	3.05*aa*R	3.05*aa*R	1.01*fR	58.00*4

*= Delivered. *Note: Red lead in oil 50¢/ higher than white lead in oil. **= Aver. wt. approx. 425 to 550 lb drums. *= Red lead prices change frequently due to pig lead price changes. *= U.S. War Dept. Spec. 3-49A. *= ASTM Spec. D266-31. *= 80% minimum ferric oxide. *= Per 108 sf roll. *= Per 432 sq ft. *= F.o.b. yard Roxbury. *= Per roll, 65 lb. *= Net carload prices, Minneapolis and vicinity. *= 45 gal containers. *= Over 80% ferric oxide. *= Not used. *= 100 lb. keg. *= F.o.b. city. *= Per 60 lb roll. *= 6-drum, 50 gal. each. *= Per 90-lb roll. *= F.o.b. factory, Chicago. *= Truckload. *= Incl. Federal tax. *= Per 90-lb square. *= Per ton. *= Ready-mixed. *= 55-gal. container. *= Drums. *= 15 lb. *= Roofers coating and cement. *= LCL, truck delivery. *= Asphalt pitch in 100 lb. package. *= (5-gal wt. approx. 425 to 550 lb drums. *= F.o.b. factory. *= Incl. freight. *= Per 324 sf roll. *= Asbestos roof coating. *= less 2% disc., 10th. *= less 2% disc., 10 days. *= 100 lb bbls. *= 50 or 100 lb bags. *= 500 lbs or more. *= F.o.b. plant, Detroit. *= 50 lb bbls. *= 25 lb. kegs. *= 250 lb. bbls. *= 400 lb. barrels. *= ASTM Spec. D962-49. *= 95/. *= Std. black. *= Milt. spec.: E TTP27; F TTY81; G TTP31. *= less 2% disc., cash. *= Per 100 lb. *= less 1% disc., 10 days. *= add 2% sales tax. *= CL. *= 1 ton or more. *= under 500 lbs, add $1. *= 50 lb. bag. *= revised.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡ Neat per ton	Gauging per ton	VERMICULITE‡ Horne Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated per bag of 4 cu ft	PERLITE‡ Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM SHEET‡ Flat .102" th 36"x108" & 48"x144" per lb‡	Corr roof .032" th 35"x12' per sht	STAINLESS STEEL† SHEET-TYPE 302‡ 20 ga 48"x96" 120" per cwt‡h	28 ga 36"x120" per cwt‡m	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ⅝"‡b	⅞"‡c
Atlanta	$31.50*ss	$37.50*ss	$1.55*ss	$1.65*ss	$1.80*ss	$1.65*ss	$1.65*ss	$0.440*oo	$8.83*s	$65.68*zz	$74.43*zz	$0.1762*ss	$0.2461*ss
Baltimore	23.80	34.60	0.95*s	1.15	1.15	1.15	1.55	0.462	0.451*r	63.00	71.25	0.1674	0.2371
Birmingham	37.00*ss	43.00*ss	1.55*ss	1.55*ss	1.60*ss	1.27*ss	1.27*ss	0.458*dM	9.62*K	67.34*K	76.09*K	0.1762*ss	0.2461*ss
Boston	22.00	30.00	1.40	1.40	1.40	1.45*ss	1.50*ss	0.462	29.35*p	65.42*dd*zz	71.92*dd	0.1762*ss	0.2461*ss
Chicago	26.50*tt	26.50*tt	1.55	1.60	1.60	1.60	1.60	0.506*z	10.29*la	64.15*ee	72.40*ee	0.1762	0.2464
Cincinnati	23.85*ss	23.85*s	1.75*ss	1.75*ss	1.75*ss	1.85*ssR	1.90*ssR	0.434	9.59	65.30*zz	74.05*zz	0.1726*ss	0.2413*ss
Cleveland	28.00*N	45.00*N	1.15*ss	1.15*ss	1.24*ss	1.45*ss	1.45*ss	0.458*aa	8.48	64.35*ozz	72.50*ozz	0.1762*ff	0.2461*ff
Dallas	30.65	39.65	1.07	1.23	1.32	1.21	1.32	0.484	9.517*	65.00	74.00	0.1762*	0.2694
Denver	22.00	22.00	1.50	1.40	1.50	1.40*ss	1.55*ss	0.452	10.80	69.07*gg	78.09*gg	0.1702	0.2380
Detroit	28.00*ss	28.00*ss	1.27*ss	1.31*ss	1.40*ss	1.43*ff	1.50*ff	0.452*a	10.19*a	68.15*zzz*	77.52*zzz*	0.1959	0.2705
Kansas City	30.00	35.00	1.14*f	1.18*f	1.26*f	1.18	....	0.444	23.20*ggvv	67.50*f	76.25*f	0.1762	0.2464
Los Angeles	27.00*ff	28.00*ff	1.25*ff	1.20*ff	1.25*ff	1.06	1.10	0.486	10.543	66.02	74.27	0.1762	0.2464
Minneapolis	35.00*f	35.00*f	1.55*f	1.70*f	1.80*f	1.40*S	1.40*S	0.468	16.23	63.61*fG	69.61*fG	0.1762*f	0.2464
Montreal	27.60*f	35.00*f	1.25*f	1.40*f	1.50*f	1.15*e	1.15*e	43.95*AH	12.10*H	64.75*H	....	0.1840	0.2587
New Orleans	34.00	48.00	1.25*f	1.25*f	1.25*f	1.25*f	1.25*f	0.44	23.00*R	71.50	72.45	0.1762	0.2464
New York	26.00	33.00*s	1.35	1.30	1.50	1.40	1.40	0.462*ad	9.29*aR	64.00*aR	72.33*aR	0.1726*	0.2413*
Philadelphia	23.25*ss	32.00*ss	1.35*ss	1.35*ss	1.40*ss	1.05*ss	1.05*ggss	0.44*ass	9.49*ass	66.00*ass	25.72*ass	16.15	22.24
Pittsburgh	30.00*s	33.00*s	1.50*s	1.50*s	1.50*s	1.50*s	1.50*s	0.452	9.46	64.00	76.25*pp	0.1555	0.2818
St. Louis	30.00*s	41.00*s	1.50*ss	1.60*ss	1.55*ss	1.60*ss	1.90*ss	0.452	10.28	65.39*Kmm	71.50*ss	17.02*mss	21.32*mss
San Francisco	29.50*ss	39.50*ss	1.38*ss	1.38*ss	1.50*ss	1.38*ss	1.38*ss	0.502	9.76*	66.50*K	74.25*K	0.1762	0.2464
Seattle	42.40*s	45.00*s	1.55*s	1.25*ss	1.50*s	1.50*s	....	0.513*D	9.90*D	67.02*D	75.77*D	0.1762	0.2818
Toronto	29.00	48.50	1.45	1.60	45.00*Q	0.3995	24.75*ap	73.74	86.52	0.2917	0.3265

‡trucklots, delivered. †f.o.b. warehouse. *f.o.b. city. *= delivered. *= F.O.B. *= F.O.B. *= 0.100"th. *= 34" x 60" sheet. *= per 100 ft. *= 5 tons & up; cold roll, anneal & pickled 2B finish. *= incl. Federal tax. *= add 25¢ for pint of additive. *= 1100 & 3003 alloy, mill finish. *= bag of 3 cu ft. *= treated with air entraining agent. *= 2-10M ft. *= f.o.b. mill ft equalized with nearest stocking competitor. *= 250 sacks or more. *= 100 sq ft. *= per lb. *= 30 lb bag. *= 36" x 108"; 10.81 lb. sh; 48" x 144"; 21.7 lb. sh. *= 19.31 lb. sh. *= f.o.b. plant. *= 48" x 144". *= 0.11"th. *= 27 gauge. *= 16M lb & up. *= add $1.00 cwt boxing. *= 4 tons & up. *= add $2 cwt boxing; $0.75 cwt on skids. *= Theoretical wt for 48" x 96"; 60.4-lb. per sh. *= 300-bag lots. *= 100-lb bag. *= Theoretical wt; 19.7-lb per sh. *= 2% cash. *= skid packed. *= type 304. *= Philadelphia and suburbs. *= less 2% disc. 15 days. *= less 2% disc. 10 days. *= less 2% disc. 10th. *= add 2% sales tax. *= Type N. *= Per 100 sf. *= less 1% disc. 10 days. *= .021 ga. *= .061" th. *= Per 100 lb. *= crated. *= 15M lb. *= less 1% for cash. *= Quantity differential. *= less 5% disc. 10th. *= less 1% disc. 10th. *= Fed. tax exempt. *= less 1/2%, 10 days. *= 5% disc. 30 days. *= 3003; .452 for 1100. *= less 2% 15th mo. *= less $2, cash & carry. *= less 2% 15 days. *= per ton. *= add .10 bag under 200 bags. *T

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, May 7; Next, Jan. 4.
- Iron and Steel Products, pipe: Last, May 14; Next, Jun. 11.
- Wood Products, Glass, Explosives, Chemicals: Last, May 21; Next, Jun. 18.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor: Building	Common Labor: Heavy Const	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$3.75	$3.10	$3.30 + 7½¢	$3.225	$3.25	$3.50 + 10¢	$3.35 + 20¢	$1.75	$1.75	$1.75	$1.85	$2.10
Baltimore	4.10 + 10¢	3.90 + 7½¢	4.00 + 7½¢	3.80 + 10¢	4.00 + 7½¢	4.15 + 7½¢	4.30 + 7½¢	2.20 + 7½¢	2.20 + 7½¢	2.10 + 7½¢	2.10 + 7½¢	2.20 + 7½¢
Birmingham	3.85	2.95	3.35 + 10¢	3.22	4.17	3.125	3.47 + 10¢	1.75	1.85	1.85	2.02	2.35
Boston	3.80 + 30¢	3.45 + 10¢	3.90 + 20¢	3.774 + 10¢	3.65 + 15¢	3.75 + 25¢	4.20 + 10¢	2.65 + 10¢	2.55 + 10¢	2.45	2.45 +	2.65
Chicago	3.52½ + 7½¢	3.65 + 20¢	4.00 + 10¢	3.55 + 5¢	3.70 + 21¢	3.90 + 12¢	3.75 + 22¢	2.77½ + 7½¢	2.77½ + 7½¢	2.46 + 15¢		
Cincinnati	3.85	3.52½	3.65 + 10¢	3.575 + 60	3.625	3.52 + 4¢	3.80 + 10¢	2.62½	2.52½	2.45 + 21¢	2.55 + 21¢	2.65 + 21¢
Cleveland	3.965 + 10¢½	3.965	3.80 + 10¢½	3.80 + 10¢½	3.80½	4.05¢	3.80 + 10¢½	3.250	3.165¢	2.52 + 10¢½	2.52 + 10¢½	2.52 + 10¢½
Dallas	3.675m	3.250	3.425 + 7½¢	3.375	3.625 + 13¢	3.375 + 7½¢	3.45 + 9½¢	1.70	1.70	1.70 2.625	1.70 2.625	0.70 2.625
Denver	3.90	3.34	3.41 + 7½¢	3.15	3.625 + 12¢	3.75 + 14¢	3.80 + 10¢	2.25	2.25	2.30	2.50	2.65
Detroit	3.90 + 30¢	3.55 + 12¢	3.90 + 22½¢	3.47 + 25¢	3.66 + 31¢	3.80 + 35½¢	3.745 + 13¢	2.80 + 42¢	2.80 + 42¢	2.80	2.80	2.80
Kansas City	3.95	3.50	3.55	3.445	3.75	3.60 + 25¢	3.60 + 9½¢	2.455	2.505	2.43	2.43	2.505
Los Angeles	4.00 + 15¢	3.375 + 20¢	3.85 + 20½¢	3.31 + 10¢	4.00 + 30¢	4.15 + 4¢	3.90 + 8¢	2.65 + 10¢	2.65 + 10¢	2.63 + 10¢	2.83 + 20¢	3.12 + 10¢
Minneapolis	3.875	3.45	3.62	3.45	3.80 + 23¢	3.85 + 39¢	3.42 + 20¢	2.70	2.70	2.70	2.70d	2.85
New Orleans	3.575 + 5ed	3.10d	3.40 + 7½ed	3.225 + 7½¢	3.12 + 5¢	3.475 + 7½¢	3.40 + 15¢	1.80¢	1.80¢	2.575 + 7½¢	2.575 + 7½¢	2.575 + 7½¢
New York	4.65 + 13e†	4.20 + 31e‡	4.45 + 16e†	4.45 + 30¢	4.35 + 52¢	4.15 + 1.32	4.80 + 15¢	3.10 + 25e‡	3.10 + 25e‡	2.35 + 22½¢	2.35 + 23½¢	3.15 + 23½¢
Philadelphia	4.00 + 17¢	3.785	4.175 + 23e‡	2.565 4.23 + 10¢	4.15 + 15¢	4.07½ + 19¢	4.10 + 16½¢	2.65	2.35		2.57 + 15½¢	
Pittsburgh	4.20 + 20¢	3.675 + 15¢	4.00 + 20e†	3.73 + 20¢	3.825 + 20¢	3.85 + 32½¢	4.00 + 20¢	2.45 + 20e‡	2.425 + 20¢	2.37 + 20¢	2.51 + 20¢	2.61 + 20¢
St. Louis	4.05 + 32½¢	3.725 + 10e‡	3.75 + 7½¢	3.825	3.80 + 7½¢	3.95½ + 29.5¢	3.92½ + 27½¢	2.775 + 10¢	2.775 + 10¢	2.50 + 12½¢	2.50 + 12½¢	2.80 + 12½¢
San Francisco	4.10 + 12½¢	3.30 + 32½¢	3.85 + 20¢	3.405 + 10¢	3.74 + 52½¢	3.91 + 11½¢	3.70 + 40¢	2.665 + 00¢	2.665 + 10¢	2.51 + 10¢	2.75 + 10	2.90 + 10¢
Seattle	3.90 + 10¢	3.32 + 10¢	3.59 + 10¢	3.29 + 20¢	3.57 + 30¢	3.65 + 26¢	3.81 + 24¢	2.55 + 10¢	2.55 + 10¢	2.57 + 17½¢	2.57 + 17½¢	3.07 + 17½¢
Montreal	2.35 + 5¢	2.15 + 5¢	2.25 + 5¢	2.25 + 5¢	2.35 + 5¢	2.35 + 5¢	2.32 + 5¢	1.55 + 5¢	1.55 + 5¢	1.55 + 5¢	1.55 + 5¢	1.55 + 5¢
Toronto	3.00 + 12¢	2.80 + 11¢	2.95 + 11¢	3.05 + 11¢	2.80 + 19¢	3.30 + 13¢	2.95 + 12¢	1.80 + 7¢	1.80 + 7¢	1.85 + 7¢	1.85 + 7¢	1.85 + 7¢

	Tractor Operators Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels: ¾ cy	1 cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.75	$2.90	$2.90	$2.75	$3.275	$3.425	$2.75	$2.675	$1.87
Baltimore	3.40 3.55 + 10¢	3.40 3.55 + 10¢	3.40 3.55 + 10¢	3.40 3.55 + 10¢	3.50 3.95 + 10¢	3.50 3.95 + 10¢	3.40 3.55 + 10¢	2.85 3.00 + 10¢	2.25 + 7½¢
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.59	2.52	1.90
Boston	3.40 + 10¢	3.40 + 10¢	3.40 + 10¢	3.40 + 10¢	3.775 + 10¢	3.775 + 10¢	3.40 + 10¢	3.325 + 10¢	2.60 + 7¢
Chicago	3.30 + 5¢	3.45 + 5¢	3.30 + 5¢	3.30 + 5¢	3.90 + 5¢	3.90 + 5¢	3.50 + 5¢	3.30 + 5¢	3.55 + 5¢
Cincinnati	3.575	3.575	3.575	3.575	3.575	3.60	3.60	3.60	3.60
Cleveland	3.746	3.746	3.746	3.746	3.996	3.996	3.746	3.6156	3.6156
Dallas	1.70 2.625	1.70 2.625	1.70 2.625	1.70 2.625	3.106	3.106	1.70 2.625	1.85	1.85
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	3.52
Detroit	3.50 + 10¢	3.50 + 10¢	3.50 + 10¢	3.50 + 10¢	3.50 + 10¢	3.50 + 10¢	3.50 + 10¢	3.34 + 10¢	2.93 + 14¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.71 + 10¢	3.71 + 10¢	3.71 + 10¢	3.81 + 10¢	3.81 + 10¢	3.81 + 10¢	3.81 + 10¢	2.91 + 10¢	2.89 + 10¢
Minneapolis	3.08	3.30		3.30	3.52	3.75	3.08	3.12	2.85
New Orleans	3.225 + 7½ed	3.225 + 7½ed	3.225 + 7½ed	3.225 + 7½¢	3.225 + 7½ed	3.225 + 7½ed	3.225 + 7½¢	2.575 + 7½¢	1.90
New York	3.825 + 31e‡	3.825 + 31e‡	3.825 + 31e‡	3.95 + 32¢	4.70 + 35¢	4.70 + 35¢	3.95 + 32¢	3.95 + 32¢	3.55 + 15e‡
Philadelphia	2.565 4.23 + 10¢			2.565 4.23 + 10¢		2.565 4.23 + 10¢	2.565 4.23 + 10¢	2.565 4.23 + 10¢	2.45
Pittsburgh	3.44 + 10¢	3.44 + 10¢	3.44 + 10¢	3.44 + 10¢	3.64 + 10¢	3.64 + 10¢	3.64 + 10¢	3.15 + 10¢	2.30 + 20¢
St. Louis	3.525	3.525	3.525	3.525	3.525	3.525	3.525	3.275	3.275
San Francisco	3.70 + 10¢	3.70 + 10¢	3.70 + 10¢	3.70 + 10¢	3.55 + 10¢	3.55 + 10¢	3.75 + 10¢	3.10 + 10¢	2.955 + 10¢
Seattle	3.26 + 20¢	3.26 + 10¢	3.26 + 10¢	3.26 + 10¢	3.63 + 20¢	3.63 + 20¢	3.45 + 20¢	2.99 + 20¢	3.05 + 10¢
Montreal	1.75 + 4¢	1.98 + 4¢	1.98 + 4¢	1.98 + 4¢	2.25 + 5¢	2.25 + 5¢	1.98 + 4¢	1.85 + 4¢	1.85 + 4¢
Toronto	2.30 + 10¢	2.40 + 10¢	2.40 + 10¢	2.40 + 10¢	2.90 + 12¢	3.05 + 12¢	2.70 + 11¢	2.30 + 10¢	2.40 + 10¢

* ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.840. ENR Common Average $2.549

Description of fringe benefits last appeared Feb. 26; will next appear in Dec. Cost Issue.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a Apr. 1; 10¢ b Apr. 1; 12¢. 1959: c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢ f Oct. 1; 20¢ g Sept. 1; 11¢ h Aug. 1; 7½¢ i Jul. 1; 12½¢ j Jul. 1; 15¢ k Jul. 1; 20¢ l Jul. 30; 10¢ m Jul. 1; 7½¢ n Jun. 1; 15¢ o Jun. 1; 10¢ p Jun. 1; 5¢ q Jun. 1; 25¢ r Jun. 1; 12½¢.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board: tapered edge per Msq ft ½"	⅝"	Gypsum Board Lath: plain or perf per Msq ft ⅜" x 16" x 48"	Gypsum Sheathing: tongue & groove per Msq ft ½" x 2' x 8'	Fiber Board Sheathing: asph impreg & coat per Msq ft ½" sq ed.	½" T&G	Fiber Board Insulation: sq edge, paint per Msq ft ½"	Mineral Wool Insulation: loose, per 40-lb bag a	3" batts per M sf a	Glass Fiber Insulation: loose, per 40-lb bag a	3" batts per M sf a	Aluminum Foil: 60% Kraft 1 skle foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65.00F	$55.00F	$42.00F	$65.00F	$68.00F	$127.00F	$70.00F	1.50z	$70.00F	$2.00	$80.00F		
Baltimore	51.70	45.55	34.25	55.35	65.00	108.50	59.00	1.30	66.50	1.50	45.00	$4.00	$33.50
Birmingham	68.00H	57.00H	42.77H	75.00H	67.50H	140.50H	85.50H	1.40	70.00	1.60	75.00	3.77gG	
Boston	50.00m	50.00m	36.00m	60.00m	65.00	120.00	79.00Gn	1.45b	75.00		75.00	5.30	53.50g
Chicago	47.00	54.00	45.00	62.00	87.00	123.00	87.00	1.55	80.00		63.65l	5.25g	
Cincinnati	48.00cH	42.85cH	32.05cH	51.15cH	70.00cH	125.00cH	72.50cH	1.20cH	62.50cH	1.20cH	74.00cH	3.25cJ	50.00cJ
Cleveland	62.00CF	56.50CF	41.50CF	65.00CF	75.00CF	125.00CF	80.00CF	1.35 1.50H	72.00H		50.00	17.50cJ	55.00J
Dallas	55.00	52.50	42.50	60.00	68.75	118.00	68.75	2.00	65.00	1.45	70.62	5.00gA	45.00
Denver	66.00H	58.50H	45.00H	66.00H	79.90H	130.00H	78.90	1.50b	65.00cb	1.75b	65.00a	5.25	48.65
Detroit	66.00K	56.00K	42.45K	66.00K	60.50DK	100.50DK	60.50DK	1.30b	55.00	1.95b	88.00		
Kansas City	65.00H	55.00H	40.00H		72.00H	115.00H	75.00H	1.30H	75.00H	2.00H	75.00H	3.95d	53.95
Los Angeles	66.00FR	60.50F	0.33zF	64.50F	75.00F	125.00F	80.00F	26.00pF	83.00F	1.35z	63.00	4.30g	
Minneapolis F	75.00F	65.00F	0.41zF	80.00F	75.00F	130.00F	78.00F	2.00 F	80.00F	1.80F	80.00F	5.50F	
Montreal	56.00M	47.00M	36.30M	53.00M	63.25M		63.00M	1.50M	66.00M	1.50M	66.00M	9.00gM	56.00M
New Orleans	60.00H	52.00H	45.00H	60.00H	67.00H	130.00H	80.00H	2.00	65.00*				
New York	55.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55b	68.50		68.50	4.35s	54.50c
Philadelphia	55.60 X	50.55 X	36.40 X	52.57 X	73.00 X	110.00 X	65.00 N		60.70 X		70.75 X	5.60 6.34 X	40.50 X
Pittsburgh	74.00 K	65.00 K	50.00 K	63.00 K	62.50 K	102.50 K	57.50 K	1.05z K	55.00 K	1.05z K	55.00 K	3.80gg K	35.50 K
St. Louis	67.00HO	56.50HO	40.00HO	70.00HO	76.00HO	121.50HO	80.00HO	1.35gHO	85.00HO	2.00gPHO	74.00HO	4.50gHO	
San Francisco	57.00F	48.00F	0.35zF	58.00F	68.00F	106.00F	67.00F	1.75F	66.50F	1.75F	66.50F	5.10	60.00F
Seattle	68.30 K	57.65 K	51.05 K	65.00 K	74.50 K	125.00 K	71.50 K	1.15z K	56.00 K	1.90*p K	56.50*l KA	4.25 K	46.50 P K
Toronto	58.00	50.00	38.00	64.50	75.00		75.00	1.65	65.50		65.50	16.00g	49.00

** F.o.b. warehouse. *a Semi thick. *b 30-lb bag. *c 12" to 24" width. *d 40-lb kraft paper, 5 Msf, 100-500 rolls. *e 20-lb sq ft bag, 4" thick. *f Full trailer loads. *g 80-lb kraft paper backing 400 rolls or over. *h LCL. *i 40". *j 80-lb. *k 2". *l 8 to 10 ton quantities. *m Distributor's siding. *n Per M sf roll. *o 32-lb bag. *p 500 sf. *q Per cw. *r 35-lb bag. *s 26-lb bag. *t Flame proof $75. *u F.o.b. city. *v Sq yd. *w 30-lb bag. *x Spun rock wool. *y 650 sf. *z ½ ton. *A F.o.b. plant, freight allowed. *B 1 CL. *C 10 M sf. *D less 2% disc, 10th. *E 1½ of 1%, 10 days. *F 2% disc, 10 days. *G 1½% disc, 10 days. *H less 2% for cash. *I 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb bags.

MEXICO CITY WAGES & PRICES

WAGES, av per hr, 8 hr day	May '59	April '59
Common labor, building (peon)	1.57	1.57
heavy const (peon)	2.00	2.00
Skilled labor (carpenters I-C)	3.25	3.25
bricklayers I-C	2.57	2.57
struct. iron workers	4.38	4.38

MATERIALS PRICES, F.o.b. City	May '59	April '59
struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4" per metric ton	2100	2100
Reinf. steel, corrugated rods, per ton		
⅜" I" x 11 meters	2000	2000
¾" I" x 11 meters	2000	2000

	May '59	April '59
Gravel, truckload at 3½ cu meters		
Blue gravel	90.00	90.00
Rose gravel	90.00	90.00
Cement, std. port. (Tolteca)	240.00	240.00
Lumber, 2x4" pine per M ft	1900.00	1900.00
1" pine per M ft	1900.00	1900.00

BIG AD CAMPAIGN WARNS OF GROWING WATER PROBLEM!

Urges local support for better water systems

CAST IRON PIPE RESEARCH ASSOCIATION OFFERS LOCAL PLAN-OF-ACTION BOOKLET

Here's help for consulting engineers and everyone else directly concerned with the supply, treatment and distribution of water—help that will acquaint the general public and community leaders with the vital importance of this growing problem.

On the opposite page you see the second in a series of advertisements, this one appearing in April *Reader's Digest*. Placed by the Cast Iron Pipe Research Association, these striking advertisements point out to Mr. and Mrs. America how much we depend on a good water system and why we can no longer take it for granted.

Similar advertising will appear regularly in *U. S. News & World Report, Nation's Business, Better Homes & Gardens, American Home* and *Sunset* magazines to carry this public service message to millions of civic leaders and homeowners.

FREE LOCAL HOW-TO-HELP BOOKLET

These ads offer a free booklet telling about the water problem. It shows how responsible citizens can acquaint themselves with the needs of their community. It also gives a step-by-step outline of action, telling how they can help their officials extend and improve the local water system through more adequate rate structures or financing.

Let us send you a *free* copy of this new booklet. Write to Thos. F. Wolfe, Managing Director, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

THREE REASONS WHY CAST IRON PIPE IS *AMERICA'S GREATEST WATER CARRIER:*

1. More miles of underground cast iron water mains are now in use than of all other kinds of pipe combined.
2. More miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.
3. Impartial surveys prove that today's consulting engineers and water utility officials prefer cast iron pipe for underground water distribution by an overwhelming majority.

CAST IRON PIPE

Reader's

Oh, what will you do without water?

You mean there's a shortage?
Indeed there is. In the last five years over 1000 U. S. communities have had to ration water. It's growing less plentiful all the time.
Will *you* run dry? It depends on you.

Now, what can you do about water?

This free booklet, "*WATER—make sure you'll always have plenty.*" tells how to learn if you're running short, what to do if you are. Write Cast Iron Pipe Research Assn., Prudential Plaza, Chicago 1, Ill.

Printed in your interest by the makers of America's greatest water carrier . . .

CAST IRON PIPE

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

▲ MASSACHUSETTS Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
C. J. Maney Co., Inc., 171 Bedford St., Lexington, Mass., CA $4,658,806, est. $5,018,550, hy. and bridge constr., Section Interstate Rte. 93, EA 1-93-1 (11)2, Medford and Stoneham. Bids Apr. 22, awarded May 12. CD 4-24 under LB.

▲ MASSACHUSETTS Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
The Barletta Co., Inc., 10 Whipple Ave., Roslindale, Mass., CA $3,082,957, est. $3,420,433, hy. and bridge constr., Worcester Expressway, Federal Interstate Rte. N90, I-M40-5 (7)96, Contr. B, Worcester. Bids Apr. 14, awarded Apr. 12. CD 4/16, under LB.

BUILDINGS—LB & CA

▲† Procurement Office, Pease Air Force Base, Portsmouth, N. H., cancelled bids to have been opened May 27, 483 unit Cabinet Hill (56), Pease Air Force Base (No. 2), PORTSMOUTH, N. H. Est. $7,000,000. CD 4-24.

MIDDLE ATLANTIC

BUILDINGS—LB & CA

▲ Vermilya-Brown Co., Inc., 122 East 42nd St., New York 17, N.Y., CA Est. $5,000,000, 20 story, 242 unit APARTMENT, 1000 Block Park Ave. between Atlee and Harker Aves., Block 1001, NEW YORK, N. Y., Atlee Tower Apts., Owner, Investment Planning, 475 Fifth Ave., New York 17, N. Y., archt.

▲ Sam Minskoff & Sons, Inc., 521 5th Ave., New York 17, N.Y. (Same Bonds), CA 34 story OFFICE, Broadway and Murray Sts., NEW YORK, N.Y., Sylvan Bien, 44 W. 56th St., New York, N.Y., archt.

▲ Sam Minskoff & Sons, 521 5th Ave., New York 17, N.Y., Owner Bonds, CA 24 story OFFICE, Northeast cor. 2nd Ave. & 42nd St., NEW YORK, N.Y., Sylvan Bien, 44 W. 56th St., New York, N.Y., archt., Weinberger, Freeman, Leichtman & Quinn, 20 Vesey St., New York, N.Y., engrs.

▲ Grayco Builders, Inc., 101-15 Metropolitan Ave., Forest Hills, N.Y., CA Est. $4,465,000, two 18 story APARTMENTS, Parsons Blvd. between 71 and 72 Aves., FLUSHING, N.Y., Aguilar Gardens, 250 Contractor, Dominick Stewart & Sons, 175 Jefferson St., Brooklyn 2, N.Y., archts.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ William Muirhead Constr. Co., 1 Thirty Ave. Extension, Hicksville, N.Y., CA $2,919,016, sewage treatment plant, North Buffalo Creek Area, GREEN, N.C. (Ayden, Fountain, Grifton, Winterville, Greenville), N.C. Bids May 8. CD 3-4, under LB.

▲ Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, CA $13,228,013, steel transmission line from Sloss, Tenn., Warrior R. to Pratt City, Contracts 1, 2 and 3, BIRMINGHAM, ALA., Industrial Water Bd., City Hall, Birmingham, Ala. Bids May 5. CD 3/15, under LB.
L. E. Wilder, Center Point, Birmingham, Ala., CA $2,779,664, 21 mains from Easley to Trussel City filter plant inside Birmingham to connect with transmission line, Contract 4, Birmingham, Ala.)

BUILDINGS—LB & CA

▲ Thompson & Street Co., Parkville Rd., Charlotte, N.C., LB $3,364,700, est. $3,964,700, 105 bed PSYCHIATRY HOSPITAL, CHATTANOOGA, TENN., State Bldg. Comm., Cordell Hull Bldg., Nashville, Tenn. Bids May 12. CD 4/20.

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

▲ ILLINOIS Dpt. P. Wks. & Bldgs., Division of Waterways, Springfield,
Thomas McQueen Co., 1111 Plum Ave., Peoria, Ill., CA $2,296,933, ... Peoria, Ill.
Parro Constr. Corp. & McMahan Constr. Corp., 1034 W. 35th St., Chicago, Ill., CA $1,803,011, ... Bids Apr. 2. Awarded ...

BUILDINGS—LB & CA

▲ Murphy Homes, Inc., ... Owner Bonds, $2,500,000 ...

▲ Northbrook Homes, Inc., ... Owner Bonds, $3,250,000 ...

▲ Roediger Constr. Co., 1324 ... CA $2,525,007, ... HOSPITAL, PARMA, O., Parma Community General Hospital, 7343 W. Ridgewood Dr., Parma, O., ... Awarded May 8. CD 4/13.

Gorman & Lavelle Plumbing & Heating, 2341 E. 22nd St., Cleveland 15, O., CA $990,801, plumbing and heating for Community Hospital, Parma, O.)

▲ Huber, Hunt & Nichols, Inc., 2450 Stubbs Ave., Indianapolis, Ind., LB $14,900,000, (20 bidders), CITY-COUNTY OFFICE, INDIANAPOLIS, IND., City-County Bldg. Auth., 543 Illinois Bldg., Indianapolis, Ind. Bids May 12. CD 4-6.
Limbach Co., 1183 Essex Ave., Columbus 3, Ind., LB $4,400,000, mechanical work, Indianapolis, Ind.)
Sanborn Electric Co., 311 N. Illinois St., Indianapolis, Ind., and Watson Flagg Eng. Co., 2916 N. Harding St., Indianapolis, Ind., LB $3,396,000 electrical work, Indianapolis, Ind.)
Westinghouse Electric Corp., 150 Pacific Ave., Jersey City, N. J., LB $1,428,448, elevators, (Indianapolis, Ind.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—LB & CA

▲† Blount Bros. Constr. Co., 29 Commerce St., Montgomery, Ala., LB $2,790,179 (20 bidders), Bomarc Facilities (M-94-3, Duluth Air Force Base, Div. No. 2) (58-59-27, DULUTH, MINN., U.S. Eng., 12th D., U.S. Post Office & Custom House, St. Paul 1, Minn. Bids May 14. CD 4-28.

BUILDINGS—LB & CA

▲ Fred W. Ahlemeyer Co., 6204 Mcknight Rd., St. Louis 24, Mo., Owner Bonds, $3,000,000, 500 frame, concrete RESIDENCES, incl. concrete paved streets, storm and sanitary sewers, etc., Chatham Village subdivision on McKelvey Rd. south of St. Charles Rock Rd., ST. LOUIS COUNTY, MO.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† Calif., Lemoore, FUEL STORAGE, etc.—BA 6/17—Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, fuel storage and distr. sys., Naval Air Station, over $2,000,000. CD 3/15.

BUILDINGS—BA

▲ Ore., Corvallis, DORMITORY, etc.—BA 6/12—State Bd. Higher Educ., University of Oregon, Eugene, Dormitory Unit No. 5 with cafeteria, Oregon State College, Burns, Bear, McNeil & Schneider, 2940 S.E. Belmont St., Portland, archts. CD 5/8.

▲ Calif., Sacramento, FEDERAL OFFICE—BA 6/19—General Services Admin., 49 4th St., San Francisco, 8 story, penthouse, 344,550 sq. ft., rein.-con., masonry, precast concrete quartz aggreg. exterior, Federal Bldg. (Lease-Purchase), $10,000,000, Harry J. Devine and Herbert E. Goodpastor, Francesch, Dreyfuss, Rickey & Brooks, 1012 J St., archts. CD 2-8/58.

HEAVY CONSTRUCTION—LB & CA

▲† George M. Brewster & Sons, 275 Fort Lee Rd., Bogota, N. J., LB $4,606,260, second stage, Willard Dam, Weber Basin Proj., Spec. DC 5185, UTAH, Bureau Reclamation, Dpt. Interior, Ogden, Utah. Bids May 14. CD 4/13.

▲† Morrison-Knudsen Co., Inc., 319 Broadway Ave., Boise, Idaho, Kaiser Engrs. Div., H. J. Kaiser Co., 1924 Broadway, Oakland, Calif., Macco Corp., 14404 Paramount Blvd., Paramount, Calif., Raymond International, Inc., 140 Cedar St., New York, N.Y., and F & S Constr. Co., Ephrata, Wash., LB $88,878,411, est. $107,937,222 (5 bidders), (Low bid included alternates using Swedish generators $11,261,550, General Electric Co. generators $15,650,157), concrete and earthfill, Wanapum hydro dam, Columbia River, 832,000 kw. power house, Ephrata, WASHINGTON, Grant Co. Public Utility Dist., Ephrata, Wash. Bids May 15. CD 4-13.

HEAVY CONSTRUCTION—LB & CA

▲ Vinnell Co. & Ukropian-Polich-Kral Co., Box 105, San Gabriel, Calif., LB $2,387,732 (joint venture) (4 bidders), Schedule 2 rein.-con. pipe, Sched. II, 24 in. and 36 in. rein.-con. pipe, Sched. III, 24 in., 72 in. and 66 in. rein.-con. pipe, Sched. III, 42 in., 60 in. and 48 in. rein.-con. pipe, totaling about 8 mi. sewer and pipeline constr., WALNUT CREEK, CALIF. Contra Costa Sanitary Dist., 1250 Springbrook Rd., P.O. Box 428, Walnut Creek, Calif. Bids May 7. CD 4-14.

BUILDINGS—LB & CA

▲ Donald M. Drake Co., 1600 N.W. Sayer St., Portland, Ore., CA $3,131,000, general contract, RETIREMENT HOME, MEDFORD, ORE., Rogue Valley Manor, Medford, Ore. Bids May 6, awarded May 11. CD 5/13, under LB.
J. M. Harder Plbg. & Heating Co., 2148 N.E. Union Ave., Portland, Ore., CA $1,264,550, mechanical work, for retirement home, Medford, Ore.)

▲ Peter Kiewit Sons Co., 345 Kiewits, Arcadia, Calif., CA $4,000,000, 13 story, 240,000 sq. ft. rein.-con. OFFICE, Wilshire Blvd. and Park View St., LOS ANGELES, CALIF., (Heet-Rothschild & Co., 333 S. La Cienega Blvd., Los Angeles, Calif. Awarded May 11. CD 4/12.

▲ Linde Co., Div. Union Carbide Corp., 30 E. 42nd St., New York, N.Y., Owner Bonds, LIQUID HYDROGEN PRODUCING PLANT, TORRANCE, CALIF.

CANADA

BUILDINGS—BA

▲ Ont., Toronto—HOSPITAL—BA 6/15—Toronto Western Hospital, 399 Bathurst St., Hospital addn., 10 story, 40x50 ft. and 40x60 ft. nurses' residence, 6 story, 82x84 ft. interns residence, 10 story, 80x128 ft. maternity wing addn. and 2 story, basem., 60x200 ft. Bathurst Bldg. addn., $5,000,000. Plans deposit $100. Govan, Ferguson, Lindsay, Kilmoyer, Langley & Keenleyside, 10 Price St., archts., Ralph C. Mannings, 745 Mount Pleasant Rd., engr. CD 4-11.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

PROPOSED PROJECTS

WATER SUPPLY

▲ Mass., Holyoke—Water Dpt., City Hall, pipe line from Mountain Reservoir to City, $2,500,000. Tighe & Bond, Inc., Bowers & Pratt, Inc., engrs. Contr. 1959.

SEWERS, WASTE DISPOSAL

▲ Conn., Greenwich, ... sewage treatment plant, grease filters, $5,000,000.

▲ N. H., Laconia, ... sewerage project, $3,085,760.

▲ O., Lakewood, ... $2,500,000.

STREETS AND ROADS

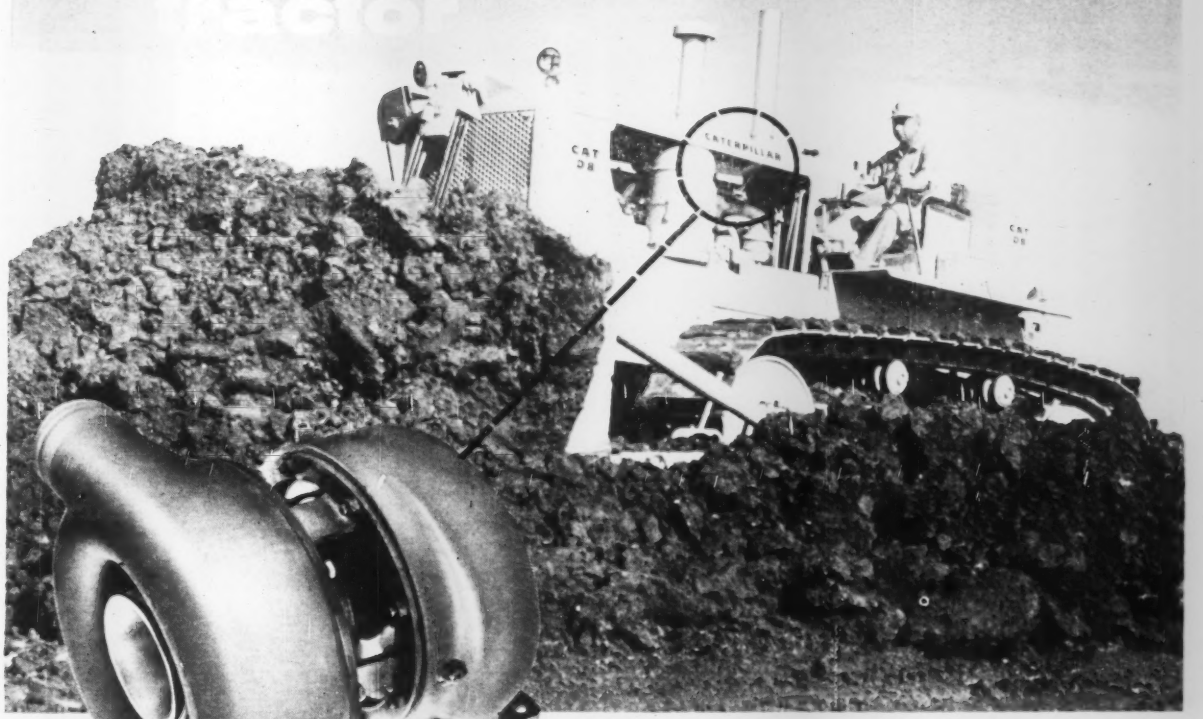
▲ Wyo., Casper, ... $9,207,000.

AIRPORTS

▲† Wash., Seattle, ...

(Continued on page 68)

More horsepower for the new Caterpillar D8 tractor



AIRESEARCH
T-1404
TURBOCHARGER

Turbocharger system specifically designed for big Series H tractor

A joint development of Caterpillar and AiResearch, the turbocharger system is an integrated part of the new D8 Series H tractor. Extensive field tests showed an increase of 20% in bulldozing and a substantial gain in pushloading production with the Series H . . . brought about by the tractor's greater horsepower, faster torque rise, greater weight and faster dozing and reverse speeds.

Specifically designed to match the new tractor's requirements, the new turbocharger underwent thousands of test hours on the new D8 operating in every kind of material on every kind of job.

AiResearch turbocharger advantages include: increased horsepower, improved lugging ability, cooler exhaust temperatures, reduced maintenance costs, less smoking and noise. This is another application of AiResearch turbochargers to heavy industrial machinery.

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- ★ Boiler Breechings
- ★ Flues and Ducts
- ★ Condenser Shells
- ★ Condenser Piping
- ★ Heavy Turbine Housings
- ★ Fan and Blower Housings
- ★ Dust Collector Housings
- ★ Industrial Gas Mains
- ★ Expansion Joints
- ★ Hoppers and Bunkers
- ★ Tanks and Vats
- ★ Pressure Vessels
- ★ Wind Tunnels
- ★ Crane Bridge Girders
- ★ Trolley Frames and Trucks
- ★ Rigid Frames
- ★ Roll-Over Fixtures
- ★ Tank Turrets
- ★ Gun Mounts
- ★ Heavy Truck Bodies
- ★ Engine Frames and Bases
- ★ Crawler Frames
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Blvd., Detroit. Zone 2. Hospital and dental clinic. Wurtsmith Air Force Base. $2,119,000. CD 9-9.

▲ N. C., Charlotte—RUNWAY—City, City Hall, 8,500-ft. runway at International Airport. $3,000,000. CD 11-20.

▲† Wash., Moses Lake—TITAN INTERCONTINENTAL BALLISTIC MISSILE BASE—U. S. Engr., 8735 E. Marginal Way, Seattle. Zone 4. Titan Intercontinental Ballistic Missile Base, Larson Air Force Base Defense Area. $46,000,000.

▲† Wis., Kansasville—HOSPITAL AND DENTAL CLINIC—Bldg. 375, Wertsmith Air Force Base. Architect-Engr. Smith, Hinchman & Grylls Assocs., Inc., 1527 W. Lafayette Blvd., Detroit 2, Mich. Soldiers Base Hospital, Richard I. Bong Air Force Base. $2,139,000. Bids Dec. 9. CD 9-9.

PUBLIC BUILDINGS

▲ Alaska, Anchorage—HOUSING—Air Alaska Development Corp., Anchorage, Eagle Village Housing Project, Lake Otis. $15,000,000.

▲ Mass., Boston—HOSPITAL—Bd. Trustees, Dept. Administration, Bldg., City Hospital, 818 Harrison Ave., Hospital. $3,000,000. Constr. 1959.

▲ Mich., Utica—SCHOOL—Bd. Educ., Utica Community School Dist., bond election June 8, school addns., $2,886,000. CD 6-8.

▲ N. Y., Albany—SCHOOL—Bd. Educ., 141 Western Ave., plans by Thomas J. Gleason, 200 State St., Troy, for Elementary School, Pearl-Schuyler-Park and Remsen-Jay Sts. $2,000,000. CD 2-18.

▲ N. Y., Port Jervis—SCHOOLS—Central School District, high school and elementary school. $3,350,000.

▲ O., Ashland—SCHOOL—Bd. Educ., defeated bonds May 5, schools. $2,950,000. CD 1-14.

▲ O., Canton—SCHOOL—Plain Local School Dist., 3900 Frazer Ave., N.W., defeated bonds May 5, school addns., $2,180,000. CD 3-18.

▲ O., Lancaster—SCHOOL—Lancaster School Dist., voted bonds May 5, schools. $4,190,000. CD 12-2.

▲ Tenn., Tullahoma—INDUSTRIAL—Bd. Mayor & Aldermen, Tullahoma, industrial bldgs. for lease. $5,000,000.

▲ Wash., Seattle—SCHOOL—School Dist. No. 1, 815 4th Ave., N., plans by Naramore, Bain, Brady & Johanson, 1215 4th Ave., West, Seattle, for High School, $3,000,000. CD 11-9. plans by Stanley A. Dethman, 1411 3rd Ave., Seattle, for High School, Northeast part of City, $3,000,000. plans by Wadsworth & Dietz, 1111 3rd Ave., Seattle, for High School, Northwest part of City, $3,000,000. plans by Bassetti, Morrison & Nitzen, 1326 5th Ave., Seattle, for High School, entire part of City, $3,000,000, and Lake School addn., $700,000. plans by W. Marbury Cutter, Bldg. Zone Consultant, 1411 4th Ave. Bldg., Seattle, for Junior High School, $1,000,000. plans by Durham, Anderson & Freed, 1411 4th Ave. Bldg., Seattle, for Gymnasium, $700,000. plans by Bassetti, Morrison & Nitzen, 1326 5th Ave., Seattle, for Junior High School, $600,000. plans by Naramore, Bain, Brady & Johanson, 1411 4th Ave. Bldg., Seattle, for Junior High School, $600,000. plans by T. Lawrence Packard, 1411 4th Ave. Bldg., Seattle, for Elementary School, $600,000. plans by Durham, Anderson & Freed, 1411 4th Ave. Bldg., Seattle, for Elementary School, $600,000. plans by Carlson, Foy & Silvestad, 812 Bellevue Ave., Seattle, for Elementary School, $600,000. CD 11-20.

▲ Wis., West Bend—COMMERCIAL—et al.—Washington Co. courthouse and jail. $2,000,000.

▲ Wyo., Laramie—DORMITORIES—University of Wyoming Campus, plans by Porter & Porter, 1307 Thomes Ave., Cheyenne, for Women's Dormitory and dining hall. $3,025,000. Bids Aug. 4. $1,325,000. Bids Dec. 9. CD 7-15.

▲ Ont., Milton—SCHOOL—Dist. No. 8, Nassagaweya Township, for elementary school. $3,000,000.

▲ Que., Montreal—ADMINISTRATION—Provincial Govt., Bd. of Greater Montreal, 1460 McTavish St., plans by DeBelle & White, 3425 Metropolitan Blvd., E., for Bldg. Finding Aids and Data Storage. $2,800,000.

COMMERCIAL BUILDINGS

▲ Ariz., Phoenix—MOTOR HOTEL—Arizona Equities Corp., 2606 N. Central Ave., plans by Lescher & Mahoney, 4424 N. Central Ave., for motor hotel, Arizona Biltmore Area. $3,500,000. Bids about Aug. 1.

▲ Colo., Aurora—SHOPPING CENTER—Aurora Shopping Center, Inc., 1700 Broadway, Denver, for shopping center, Havana St. and Alameda Ave. $3,000,000.

▲ Idaho, Mountain Home—SHOPPING CENTER—M. A. [illegible] $2,000,000.

▲ Ill., Rockford—HOSPITAL—[illegible] $2,000,000.

▲ La., New Orleans—[illegible] $25,000,000.

▲ La., New Orleans—[illegible]

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*The Bridge Division of the State of Texas Highway Dept. uses Kern Instruments

WORLD FAMOUS FOR
Working Speed
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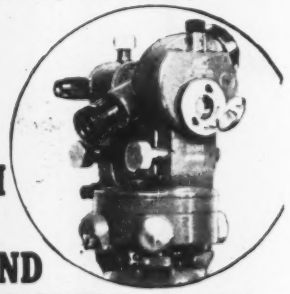

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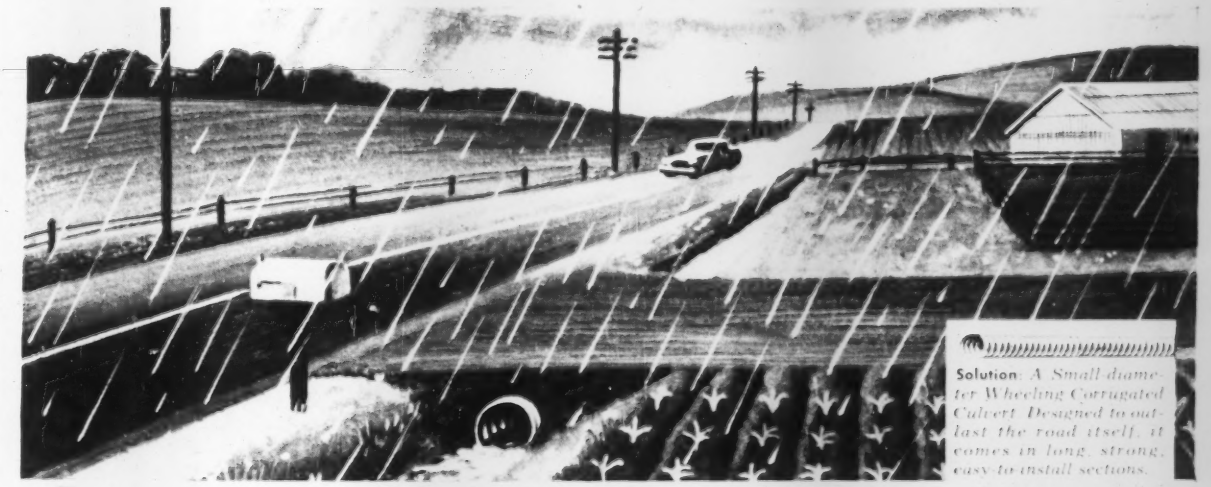
METAL CULVERT PIPE BY WHEELING

Problem: *How to drain the backed-up water in the ditch along this road? Farm is damaged by overflows during heavy rainstorms.*

End roadside drainage problems...



Solution: *A small diameter Wheeling Corrugated Culvert. Designed to outlast the road itself, it comes in long, strong, easy-to-install sections.*

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A small-diameter Wheeling Corrugated Culvert Pipe ends backed-up water where access and secondary roads meet.

Inexpensive to buy . . . light and easy to install . . . heavily galvanized to resist weather . . . Wheeling Metal Culverts save in initial cost and in maintenance cost. They have the flexibility needed to withstand shock of heavy loads and pressure from shifting fill.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters.

Write or call your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

Large diameter Wheeling Pipe—easily controls normal flow of fast-moving streams.

Wheeling Pipe Arch—a wide, comparatively flat bottom type of corrugated metal pipe for use where headroom is limited.

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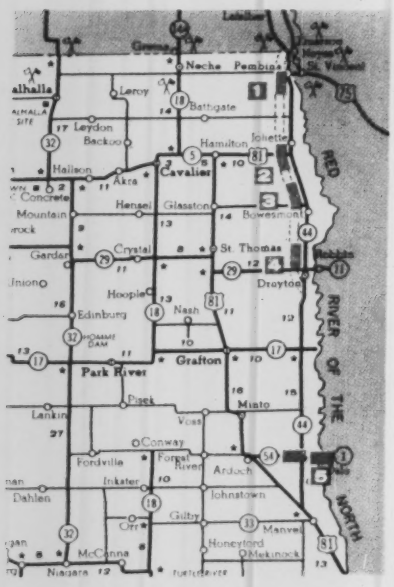
Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Madison, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

MAP showing locations of North Dakota's new Interstate Route 29 and State Route 54. Major bridges over the Pembina River at Pembina and over the Red River at Oslo, Minnesota, will be steel structures fabricated by the American Bridge Division of United States Steel. Others will be concrete on USS Steel H-Piles.



CONTRACTORS:

SITE 1: Swingen Construction Co., Grand Forks, N. D.

SITE 2: Otto J. Eickhof & Sons, Inc., Crookston, Minn.

SITE 3: Wm. Collins & Sons, Inc., Fargo, N. D.

SITE 4 & 5: Schultz & Lindsay Construction Co., Fargo, N. D.

180 feet down. Welding plate on USS H-Pile which will be spliced to a pile already down. At this site, they drive piling 180 feet to reach firm footing.

USS Steel H-Piles pay off for North Dakota they now have stable foundations

North Dakota State Highway Department Bridge Engineers have been struggling with a baffling foundation problem for years. Recently, together with Minnesota Highway Department Bridge Engineers, steps were taken to find a solution. The valley area of the Red River which forms the northern portion of the boundary between these two states was once a lake but is now filled with a tremendous quantity of unstable clay to a depth of 180 feet or more.

Previously, bridges constructed in this area had been placed on displacement type piles or on floating foundations. While neither of these methods was very satisfactory from the performance standpoint, there seemed to be no economical alternative. It was accepted as fact that periodic repairs would be necessary to correct for the deficiencies of these foundation supports. High maintenance costs appeared inevitable.

When the new Interstate Highway and other state projects were planned through the area, it was obvious that stable foundations would be needed for fourteen bridges involved. So in 1957, the North Dakota Highway Department in collaboration with the Minnesota Highway Department and the Bureau of Public Roads had test borings made in various locations. They found, at a level assumed to be the original lake bed, a mixture of gravel, clay and sand, which seemed dense enough to support piles in point bearing. Five test piles were driven and loaded. Test loads of 250 tons were successfully applied to 14", 73- and 89-pounds-per-foot USS Steel H-Piles. (Displacement piles had once been driven 80 feet into the overlying soil to attain a bearing value of only 12 tons per pile.) Working loads of as high as 90 tons per

Splicing two H-piles with diamond shaped plate. Ample strength is obtained.

Driving H-piles for the new Red River Bridge near Oslo, Minn. Previously, bridge foundations in this area were set on slabs or displacement piles.

and Minnesota . . . for 14 new bridges

89-pound pile were thus substantiated by these tests and subsequently incorporated into the final design. A total of 2,100 tons of USS Steel H-Piles were driven for these bridges.

The bridge engineers are well pleased with the results of this program. They saved additional money on the minor bridges by designing the intermediate piers to utilize piles encased in concrete as bents to support the bridge structure. They like the way the piles drive without damage, the easy splicing, and the assurance that their foundations will finally stay put.

Quick Deliveries. United States Steel is in excellent position to give you favorable deliveries on steel H-piles or steel sheet piling of any type. Write to any of our district offices or United States Steel, 525 William Penn Place, Pittsburgh 30, Pa. *USS is a registered trademark.*

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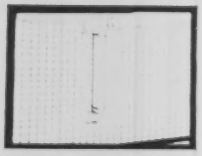

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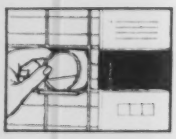
HP modular, Inter-Lock files are perfect for three big filing jobs — single drawing, positive control . . . filing of any size or mixed-size drawings . . . complete project or inactive filing. HP installations can be quickly assembled in any size, floor to ceiling, around obstacles or other files. Single-unit indexing speeds location, removal, replacement of drawings — largely eliminates card indexing. HP assembly and indexing flexibility fits your filing needs perfectly. Let HP files save time, space, equipment cost for you.



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roll record files

HAMILTON MANUFACTURING COMPANY, TWO RIVERS, WISCONSIN

(Continued from page 68)

Chartress St., 6 story, 153,000 sq. ft. rein.-con. frame, brick stucco hotel and 7 story, 85,000 sq. ft. garage. $5,000,000.

▲ Mass., Brookline—APARTMENT—Maurice Simond & A. G. Manseau, archts., 30 Huntington Ave., Boston, apartment, 1600 Beacon St. $2,400,000. Bids in June.

1959. CD 3-8-59.

▲ N. Y., New York—OFFICE—Saul Jarcho & Samuel Lindsay, 745 Fifth Ave., Zone 22, plans by Schapiro & Lichtenstein, 360 Lexington Ave., Zone 17, 18 story office, 770 Lexington Ave., and 131-14 E. 61st St., northwest corner. $2,000,000.

▲ N. Y., New York—RECREATION AREA—Syska & Hennessy & Knapp, Inc., 270 Park Ave., New York, Zone 17, Freedomland recreation area, on Hutchinson River, Hutchinson River Parkway and New England Thruway. $30,000,000. To be completed by [illegible]

▲ N. Y., Woodside—APARTMENT—New York Tax [illegible] Union No. 6, 62 W. 14th St., New York, [illegible] by Frederick G. Frost & Assoc., 154 E. 42nd St., New York, Zone 17. Bldg. Six Towers, 6 story, to be owned by Queens Blvd., 47 Ave. & [illegible] Blvd. $11,710,000.

▲ Pa., Phila.—APARTMENTS—Webb & Knapp, Inc., 270 Park Ave., New York, N. Y., plans by Simon & Simon, 116 S. 14th St., Philadelphia, Pa., for [illegible] Ave. and Montgomery Rd. $10,000,000.

▲ Pa., Phila.—APARTMENT—Webb & Knapp, Inc., 270 Park Ave., New York, N. Y., plans by Simon & Simon, 116 S. 14th St., Philadelphia, Pa., for [illegible] $5,000,000.

▲ Pa., Wyncote—APARTMENT—[illegible] Ave. $40,000,000.

▲ Pa., Wyncote—SHOPPING CENTER—[illegible] $12,000,000.

▲ Tex., Dallas—[illegible] $5,500,000.

▲ Que., Montreal—CONCERT HALL—[illegible] $6,000,000. Mitchell & [illegible]

INDUSTRIAL BUILDINGS

▲ Calif., Antioch—MILL—[illegible] $2,000,000.

▲ Conn., West Haven—[illegible] $3,000,000.

▲ Mass., Bedford—[illegible] $5,000,000.

▲ Mass., Waltham—PLANT—[illegible] $3,000,000.

▲ Mich., Grand Rapids—PLANT—[illegible]

▲ Mich., Lansing—PLANT—[illegible]

▲ Mich., Midland—PLANT—[illegible] $3,000,000.

▲ Tex., Houston—PLANT—[illegible] $12,000,000. [illegible] $70,000. [illegible] $60,000. [illegible] $120,000.

▲ Alta., Edmonton—MILL—[illegible] $10,000,000.

UNCLASSIFIED

▲ Tennessee—[illegible] $4,600,000.

▲ Ont., Toronto—[illegible] $200,000,000.

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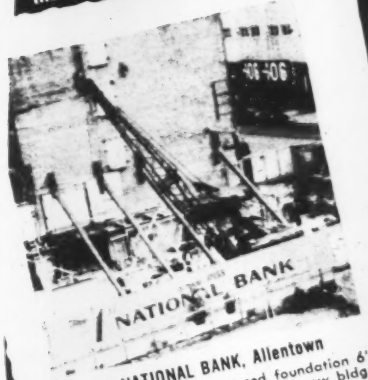

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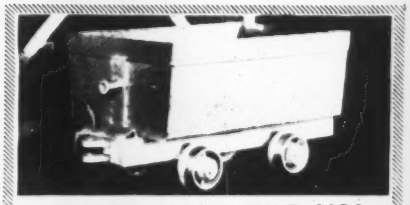

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CONSTRUCTION REPORTS

Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 8 Connecticut
STREETS AND ROADS
June 8 Connecticut

BUILDINGS—LB & CA

▲ Worsham Constr. Co., Inc., 2627 W. 6 St., Denver, Colo., CA $4,000,000, 3 story WAREHOUSE, West Clark St., WEST HAVEN, CONN. Armstrong Rubber Co., 479 Elm St., West Haven, Conn. CD 5-13.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 3 Delaware — June 4 New Jersey
STREETS AND ROADS
June 3 Delaware — June 3, 10 New Jersey
June 19 Pennsylvania

▲ N. Y., Brooklyn—BA 6-3—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1, structures and equip., Contr. 2, electrical work, Contr. 3, heating and ventilating, Contr. 4, plumbing, Hamilton Avenue Interceptor, Brooklyn Boro; extended date. Plans deposit $5, CD 4-24.

HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany.
Gulf Contg. Co., 33-15 Lawrence St., Flushing, N. Y., CA $5,443,487, Est. $7,041,000, 2 span 271 ft., 5-24 in. access, incl. in the separation compressed steel girder, 4 span 225 ft., 4 span 1142 ft., 2 span 127.5 ft., 3 span 168.8 ft., 2 span 166 ft. and 2 span 171 ft. Interstate Rte. Connection 515, Cont. 5, Cross Bronx Expressway and Throgs Neck Expressway, Rte. 695, FICBE 59-2, FITNE 59-1, Proj. I-1112-12, Bronx Co. Bids Apr. 10, CD 5-1, under LB.

▲ NEW YORK—Dpt. P. Wks., State Office Bldg., Albany.
A. E. Ottaviano, Inc., 80 Brook St., Croton-on-Hudson, N. Y., CA $5,401,730, est. $6,502,000, 1.9 mi. four-lane divided concrete Cayadutta Creek Expressway in Buffalo from Niagara Thruway eastward to Grant St., FASCE 59-1, Proj. U-1087 (4), Erie Co. Bids Apr. 2, CD 4-6, under LB.

▲ Emerson Garden Electric Co., Inc., 305 Lexington Ave., New York, N. Y. and Day & Zimmerman, Inc., 500 5th Ave., New York, N. Y., CA $6,357,150, electrical work at Niagara Switchyard, Lewiston, Niagara Co., Spec. No. PA-N-2503, Niagara Mohawk Power Corp., 300 Erie Blvd. West, Syracuse, N. Y. and NEW YORK Power Authority, 10 Columbus Circle, New York, The Colosseum, Robert Moses Power Dam, New York 19, N. Y. Bids May 12, CD 5-14, under LB.

BUILDINGS—LB & CA

▲ Kuhn, Smith & Harris, Inc., 122 W. 26th St., New York 1, N. Y., CA Est. $4,000,000, AVIONICS ENGINEERING LABORATORY, BETHPAGE, N. Y., Grumman Aircraft Engineering Corp., Plant, Bethpage, N. Y. Bids May 7, CD 4-29.

▲ Joseph P. Blitz, Inc., 545 Madison Ave., New York 22, N. Y., CA $7,587,000 general contract Benjamin Franklin HOUSES, Proj. No. NYC-27, Section II, E. 108th St., 1st Ave., E. 106th St. and 2nd Ave., Manhattan Boro, NEW YORK, N. Y., New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Apr. 28, Grand Total: $9,486,470, CD 4-30, under LB.
Herman H. Schwartz, Inc., 177 S. Portland Ave., Brooklyn 17, N. Y., CA $508,470, electrical work for Benjamin Franklin Houses (New York, N. Y.);
Sam Berley Heating Corp., 112 DeKalb Ave., Brooklyn 1, N. Y., CA $620,000, heating and ventilating for Benjamin Franklin Houses (New York, N. Y.);
C. K. Rehner, Inc., 94-20 Skillman Ave., Woodside, N. Y., CA $970,000, plumbing for Benjamin Franklin Houses (New York, N. Y.).

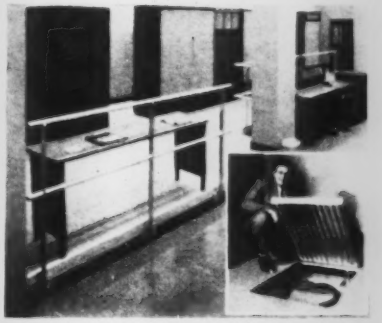
▲ Depot Constr. Co., 42-14 Crescent St., Long Island City, N. Y., CA $6,484,000, general contract RECEPTION BLDG., Bronx State Hospital, NEW YORK, N. Y., Bureau Contracts, Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Apr. 22, CD 4-24, under LB.

▲† B. J. Lucarelli & Co., Inc., 1100 McCarter Highway, Newark, N. J., LB Est. $4,100,000, 1270 unit cantonment HOUSING, Griffiss Air Force Base, Section 2, ENG-30-(635-59)-324, RIME, N. Y., Base Procurement Office, Griffiss Air Force Base, Rome, N. Y. Bids May 12, CD 4-25.

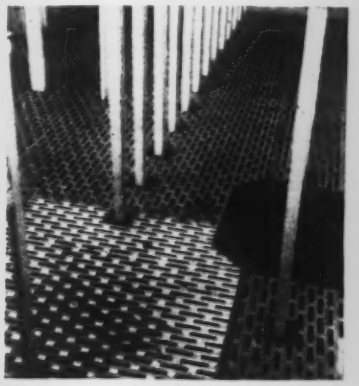
▲ Saxony Development Co., c/o Alan T. Katz, Riverton, N. J., Separate Contracts, $3,750,000, RESIDENTIAL DEVELOPMENT, 1500 Riverton Rd., etc., $1,450,000, RESIDENTIAL DEVELOPMENT, 1001 Branch Pike, etc., RIVERTON, N. J.

(Continued on page 76)

WASHINGTON ALUMINUM FLOORING FITS EVERY REQUIREMENT



RAISED PANEL FLOORING
Wherever equipment for industrial processing, data handling and computing must be installed, specify Washington Aluminum raised flooring. Cut outs can be made anywhere without weakening panels. Weight is supported as desired with deflection less than 1/360th of span. Panels easily lifted with simple suction device. Maintenance-free. Cabling, ducts beneath panels are easily accessible.



NON-SKID FLOORING
Wherever safe footing is desired, here's the answer. Upset design provides non skid traction in all directions even under wet or greasy conditions. Exclusive I Beam design rivals structural strength of steel at a fraction of the weight. Can be fabricated to any length or width; for any weight load.

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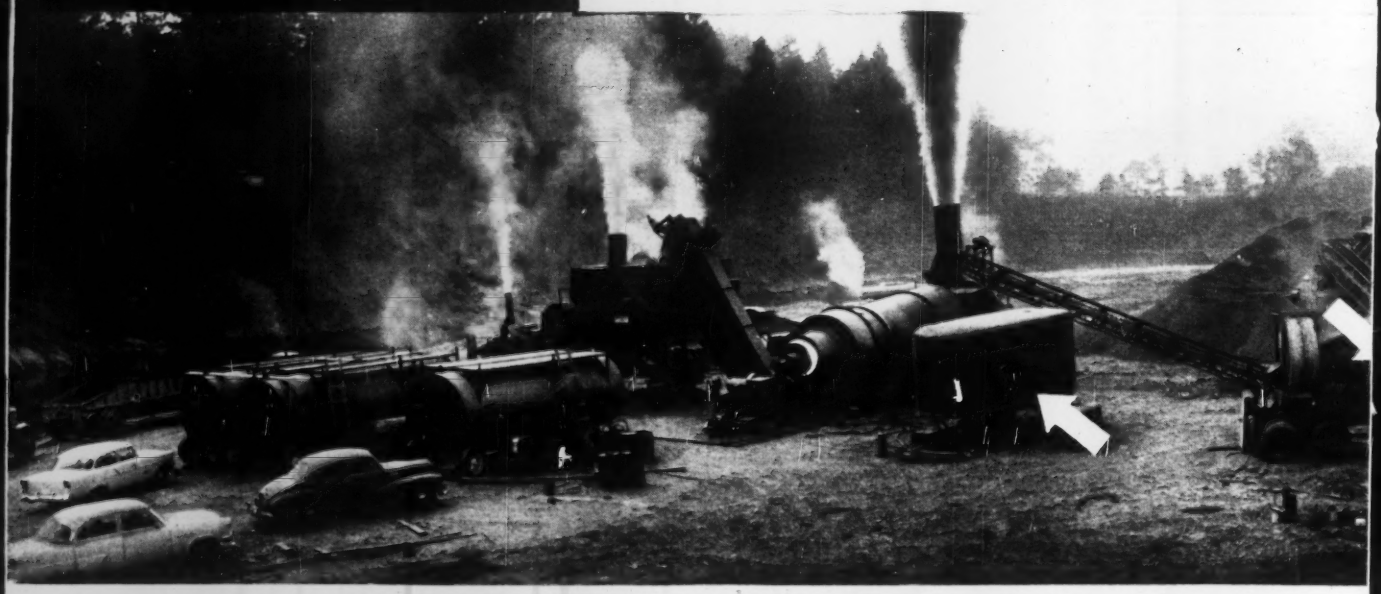
THIS PORTABLE PLANT ANYWHERE WITH CAT



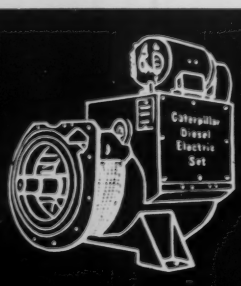
Power for A. & E. Paving Company's continuous-mix portable bituminous plant is furnished by three Caterpillar Diesel Engines. A D342 powers the crusher directly through a universal joint and shaft. All conveyors and four deck screens are run by a Cat D318 Electric Set. The hot plant—now set at 209 tons of bituminous mix per hour—is powered by a D353

This is A. & E. Paving Company's continuous-mix portable bituminous plant. Headquartered at Arcata, California, the combination crusher, dryer and hot plant can operate anywhere from Arizona to British Columbia without regard for availability of other power sources. When it was time to select his type of electric power for the spread, president Sam Parnum chose Caterpillar Portable Electric Sets with good reason.

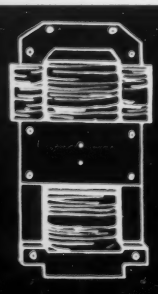
Working anywhere within so vast an area, he wanted absolutely dependable power. He wanted to be sure of nearby service anywhere the plant moved. To get full production and power protection, he had to have units that would deliver the power wherever they went.

When you outline portable plant requirements like this, the answer is Caterpillar. They *are* dependable under all conditions. Wherever you take them, you're always close to a Caterpillar Dealer, his staff of specialists and any part you'd ever need. And your need for

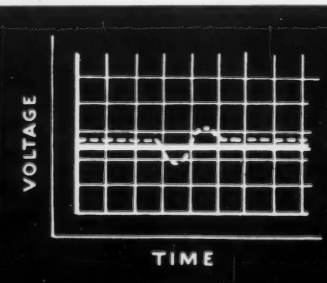
Cat Generators are self-regulated, compact, simple to operate. They're quality built for long life.



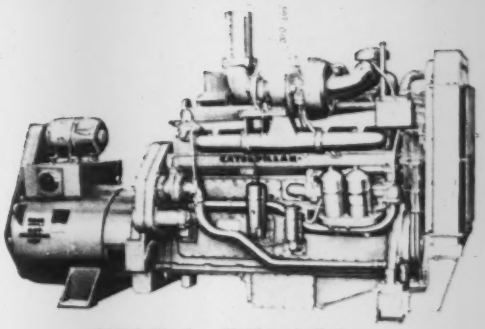
There are no moving parts in the generator regulator. Voltage is steady from no-load to full load.



Electric motor starting ability is excellent—and there's capacity to handle the surge of heavy loads.



IS SURE OF POWER
DIESEL ELECTRIC SETS



D353 (Series C) Electric Set

Electric Set from feeder to conveyor. Crusher varies from 100 to 300 tons per hour, depending on size and strength of rock—at least 200 tons with river run. Plant has ample power for any rock. Lots of power for feeding and to take material away means full capacity operation under trying conditions. Heater generates up to two million BTU for drying aggregate.

parts will probably be minor, as you can see when Mr. Parnum says, "We have not had a nickel's worth of trouble on any of the three engines since they were purchased. Fuel costs," he adds, "are low, too."

When you buy new equipment, or repower to restore old equipment's production ability, specify Caterpillar. It's the sure way to get high production, long life and low cost. For data on the full line, write to us for "Caterpillar Engines," a useful reference book.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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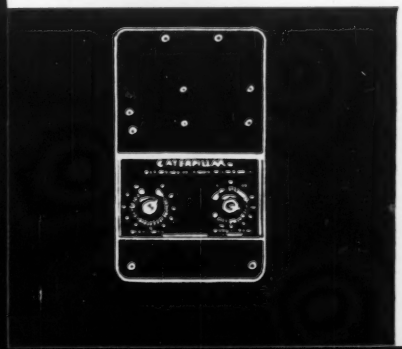
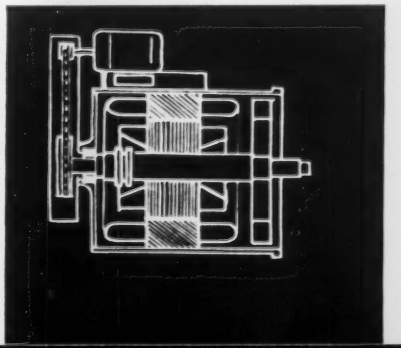
Installation is easy—with no complicated switch gear or external regulators required.



Close coupling with small frame size, top-mounted exciter and single large bearing mean shorter over-all length.



Each of these features is a buying advantage . . . you get them all in a Cat Electric Set

Lowest over-all cost per operating hour

Less down time due to power failure or engine failure

Power specified is the power you get in full

No additional operating personnel required due to unit's simplicity and self-regulating design

Quaker
Thermoid

VERSICON

the all-purpose hose
with truck-tire durability

FOR COMPRESSED AIR

It's reinforced with braided *rayon*—the fiber that puts 100,000 rough miles into your truck tires. Thus, with twice the tensile strength of cotton (the yarn usually put in this kind of hose), rayon reinforcement over a specially compounded synthetic tube lets Thermoid VERSICON hose do even more jobs for you.

FOR OIL AND GREASE

VERSICON hose is good for compressed air—especially for use with air-operated drills and pumps—for steam, water, oil, grease, gasoline, welding gases, and many dilute acids. Truly versatile!

FOR WATER AND STEAM

In specified lengths up to 500 feet, sizes $\frac{3}{16}$" to 1"; to 250 feet in sizes $1\frac{1}{4}$" and $1\frac{1}{2}$". Ask the Thermoid industrial distributor about VERSICON hose, or write *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

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(Continued from page 73)

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 2 West Virginia

STREETS AND ROADS

June 2 West Virginia June 12 Kentucky

▲ W. Va., Weirton—BA 6-10—City, City Hall, sewerage sys., incls. Contr. 6, Kings Creek interceptor; Contr. 7, trunk sewers in 12, 24 and Cullen Rd.; Contr. 8, sewers in Cove Rd., Greenbriar Rd., Fram St. and S. Belieview. CD 10-10-57.

BUILDINGS—LB & CA

▲ † Wise Constr. Co., 8th and Grace Sts., Richmond, Va., LB $5,065,000 (15 bidders), FEDERAL OFFICE BLDG., Va., Proj. 44401, RICHMOND, VA. General Services Admin., Regional Office Bldg., 7th and D Sts., S.W., Wash., D. C.; Marcellus Wright & Son, 100 E. Main St., and Merrill C. Lee, 601 E. Franklin, both Richmond, Va., archts. Bids May 15. CD 4-2.

▲ † W. S. Bellows Constr. Corp., Box 2132, Houston, Tex., CA $12,827,000, general contract 2 story POST OFFICE with 14 story tower for OFFICES, NEW ORLEANS, LA. General Services Admin., 1114 Commerce St., Dallas 2, Tex. Bids May 8. CD 5-12, under LB;

Otis Elevator Co., 1822 Young St., Dallas, Tex., CA $672,768, ELEVATOR PLANT for U. S. Post Office, (New Orleans, La.). CD 5-15, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 5 Illinois

STREETS AND ROADS

June 3 Michigan June 5 Illinois

▲ Ind., Gary—BA 6-10—City, City Hall, East Side interceptor storm sewer, Gleason Park Rd., $3,500,000. Hurst-Rasche, Hilsboro, Ill., engrs. CD 3-6.

BUILDINGS—BA

▲ Ill., Chicago—MEDICAL RESEARCH—BA 6-9. Chicago Medical School, 710 S. Wolcott St., 10 story, 110,000 sq. ft. medical research bldg., Flournoy St. and Oaden Ave., $4,000,000. A. Epstein & Sons, Inc., 2011 W. Pershing Rd., archt. CD 8-15.

▲ O., Parma—STORE—BA 6-15—The May Co., Euclid Ave. and Ontario Sts., Cleveland, Zone 14, (selected list bidders), branch store in Parmatown Shopping Center, $7,000,000. Victor Gruen & Assoc., Woodward Ave., Detroit, Mich., archts.; Hattis Engineers, Inc., 221 W. Jackson, Chicago, Ill., engr. CD 10-31-57.

BUILDINGS—SLC

▲ Mich., Detroit—POST OFFICE—GSA, Fed. Bldg. Dist., 12th and Pershing Circle, Ave. N. W., Wash., D. C., (invited supervising architect for Post Office Dept.), Post Office Dept., interior design. CD 1-29.

HEAVY CONSTRUCTION—LB & CA

▲ ILLINOIS—Dist. Engr., U. S. Army, Corps of Engrs., Hyde Centennial Bldg., Springfield, Ill.—O'Connor Constr. Co., Fairchild Bldg., Springfield, Ill., CA $4,215,000, paving and interchanges around Effingham; H. A. I., Ste. 4, Effingham, Ill.; Contracting & Material Co. and Kenny Coast Co., 220 S. Main St., Skokie, Ill., CA $744,099, paving bridges, tunnels between East-West Tollway and Ill. 55, DuPage Co. Bids Apr. 24, awarded May 15. CD 4-24, under LB.

▲ Byron Jackson Pumps, Inc., 2300 E. Vernon Ave., Vernon, Calif., LB Est. $3,000,000, WW project (A) three 56 MGD pumps, 24 MGD vert. mixed flow; (B) 15 MGD pumps, Southeast Pumping Plant, CHICAGO, ILL. Dist. Purchasing Agent, Wash., D. C., Sept. 7. Bids May 5. CD 4-21.

BUILDINGS—LB & CA

▲ J. G. Kassab, Inc., 3 Gateway Center, Pittsburgh 22, Pa., CA Est. $3,000,000, SHIPPING FACILITIES, CLEVELAND, O., Jones & Laughlin Steel Corp., 401 Penn Ave., Pittsburgh, Pa. CD 11-19.

▲ Cincinnati Development Co., 1 W. Pearl, Cincinnati, O., and Kenwood Realty, Kenwood Rd., Kenwood, O., Bldrs., $4,750,000, (1) 3 apartments, (2) 3 apartments, (3) HOUSES, Western Rd. & Rd. MA-N-O, Cincinnati, O. Stanley Engineering, Muskegon, Mich., engr. CD 10-28.

▲ Bechtel Corp., 220 Bush St., San Francisco, Calif., CA $32,000,000, design and construct, 305,000 kw GENERATING STATION, boiler and turbine generator, Greenwood Ave., near Lake Michigan, WAUKEGAN, ILL. Commonwealth Edison Co., 72 W. Adams St., Chicago 3, Ill. Awarded May 8.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 5 Minnesota June 16 17 Texas

STREETS AND ROADS

June 5 Minnesota June 16 17 Texas

BUILDINGS—BA

▲† Ark., Little Rock—FEDERAL OFFICE BA [illegible] General Services Admin., 3124 [illegible] Tex. Federal Bldg. Except allowance for plant, $3,000,000. Plans deposit $150. Stout & Allen & Associates, Inc., Norwest & Arch. 141 Gazette Bldg., archts. CD 2-12-58. Under Departmental Bldgs.

BUILDINGS—LB & CA

▲ Foster Wheeler Corp., [illegible] N. Y. CA Est. $7,000,000. Includes [illegible] PLANT at refinery, TULSA OKLA. D.K. [illegible] S. Detroit St., Tulsa, Okla. CD 4-21-

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

June 17 California

STREETS AND ROADS

June 4 Nevada June 5 Arizona

June 10 17 18 California

BUILDINGS—BA

▲ Calif., Glendale—[illegible] BA [illegible] Glendale Federal Savings & Loan Assn., 3[illegible] Ave., Glendale, Calif. Owner's [illegible] Stone, A. M. Appleton & Associates, New York Ave. and Wilson St., Glendale. Contractor $[illegible],000. CD 4-27-

▲† Alaska, Elmendorf Air Force Base—[illegible] BA [illegible] Seattle 4, Wash. [illegible] Air Force Housing, Inv. [illegible] $[illegible]. CD 1-26-59.

▲† Ariz., Phoenix—[illegible] BA [illegible] Corp., [illegible] Ariz. Owner's [illegible] Center, 19[illegible] Ariz. Architects [illegible] Associates, [illegible] Ariz. Contractor [illegible] $2900. PLANS [illegible] CD 3-5-59.

HEAVY CONSTRUCTION—LB & CA

▲† Guy F. Atkinson Co., [illegible] Ave., [illegible] Bldg., Seattle 4, Wash., [illegible] A. $20,744,405. E. [illegible] $22,277,622. [illegible] River [illegible] WASHINGTON [illegible] Eng. Office, Portland, Ore. [illegible] Work, [illegible] Ave., Anchorage, Alaska. [illegible] Contractor [illegible] $[illegible]. CD 4-6-59.

▲ Oroville-Wyandotte Irrigation Dist., Oroville, Calif.—[illegible] Bids scheduled [illegible] Dam [illegible] Feather River, 3.5 mi. [illegible] Oroville, [illegible] Butte and Yuba Counties, CALIFORNIA. [illegible] $58,000,000. CD 4-6-59.

BUILDINGS—LB & CA

▲† Kaiser Engineers, Div., Henry J. Kaiser Co., 1424 Broadway, Oakland, Calif. CA Est. $100,000,000. [illegible] PRODUCTION PLANT [illegible] Works, RICHLAND, WASH. Atty., [illegible] Hall, [illegible] Ave., Arch. [illegible] & Bldg. Inc., W. Broadway, New York. [illegible] Engineers, Portland, Ore. [illegible] Contractor [illegible] CD 2-13-59.

▲ J. H. Pomeroy & Co., Inc., Hawaiian Dredging & Constr. Co., Lincoln Development Co. & J. A. Watford, [illegible] Montgomery St., San Francisco. Engineer, [illegible] CA. Est. $150,000,000. [illegible] INDUSTRIAL [illegible] DEVELOPMENT AREA, [illegible] developing [illegible] water front, dredging [illegible] fill, [illegible] and improvements [illegible] existing [illegible] area. LAKE TAHOE, [illegible] Alif., [illegible]

▲ McNeil Constr. Co., 6855 Wilshire Blvd., Los Angeles 36, Calif. CA $3,500,000. Sterling SERVICE BANK, [illegible] S. Spring St., LOS ANGELES, CALIF. Pacific Southwest Realty, 215 W. 6th St., Los Angeles, Calif. Welton Becket & Assoc., 6067 Wilshire Blvd., Los Angeles, Calif., archts.

CANADA

BUILDINGS—BA

▲ Que., Montreal—[illegible] BA [illegible] Property Co., [illegible] Realty, Ltd., [illegible] Mountain St., Montreal. [illegible] 1,190. Steel [illegible] 12 story [illegible] 101 [illegible] cooking, Window Plaza, $[illegible]. Robert [illegible] ton, [illegible] Que. Architects [illegible] Ltd., [illegible] Que., archts. CD 11-24-58.

HEAVY CONSTRUCTION—LB & CA

▲ McNamara (Que.) Ltd., [illegible] Montreal, Que. LB. $2,960,926. [illegible] POINT, [illegible] Que. [illegible] Bldg., Montreal.

BUILDINGS—LB & CA

▲ Antigua Bldg. Corp., 10 Metcalfe Hall Bldg., Dorval, Montreal. Owner, [illegible] Owner. Builder, $3,500,000. 12 [illegible] APARTMENT, 84th Ave., Lachine and Metropolitan Blvd., MONTREAL, [illegible] Archts., Desbarats, [illegible] Desbarats, Montreal, Que. [illegible] 3010 St. Catherine St. W., Montreal, Que., archts.

AMERICANS ABROAD

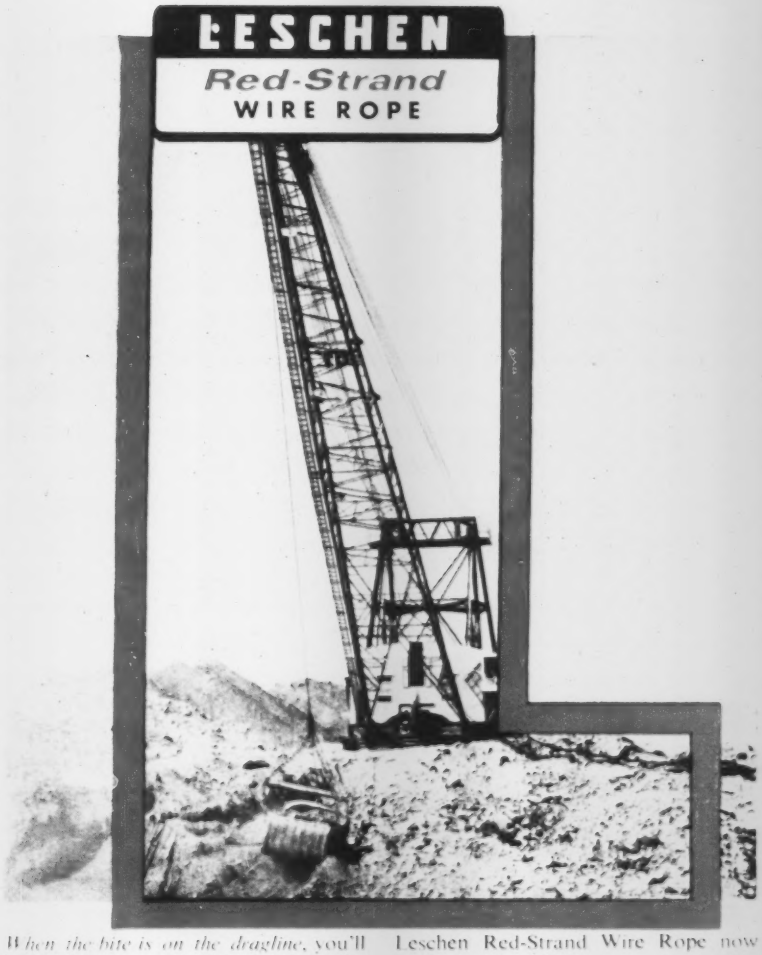
BUILDINGS—LB & CA

▲ Foster Wheeler Corp., [illegible] 5 Ave., New York, N.Y., [illegible] A. $30,000,000. [illegible] Contractor [illegible] [illegible] PLANT [illegible]

(Page of Advertisements see pp. 87 to 89)

when the going gets rough-

give 'em "L"



When the bite is on the dragline, you'll be glad you rigged with *Leschen*—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines . . . new processes . . . exclusive new continuous-flow technique—all as modern as tomorrow. Try Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! *Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.*

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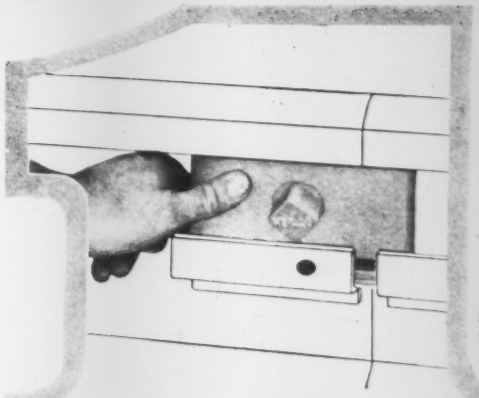
HELTZEL'S NEW *Cam-Lok

The cam expands the lock both front-to-back and top-to-bottom to align form tread and face simultaneously.

HELTZEL STEEL

STEEL FORMS!



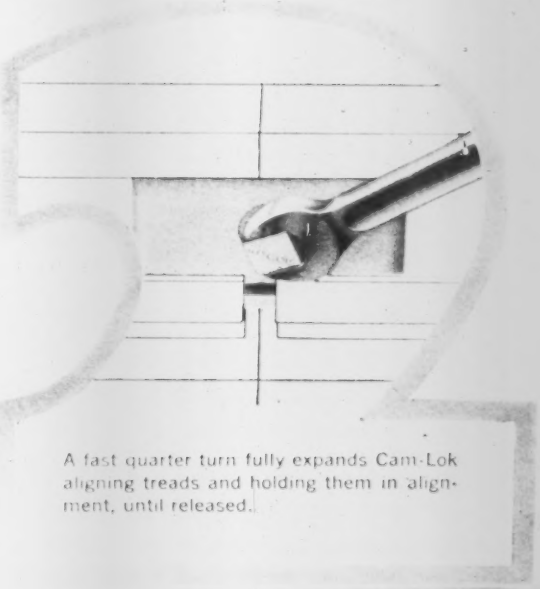
Tapered leads make the Cam-Lok easy to position. This feature also permits greater form-to-form flexibility while setting.

From steel form headquarters—revolutionary new highway forms that go together with absolutely rigid straight-line joints . . . faster, easier than ever before! They're HELTZEL'S NEW *CAM-LOK STEEL FORMS!

Sturdily constructed on a simple cam principle, the new Cam-Lok slides easily into position. A fast quarter turn of the cam draws the treads of both form sections into alignment—with a joint that can't shake loose regardless of the vertical thrust of the machine weight or the horizontal thrust of spreader and finisher. An open end wrench is the only tool needed. There's no sledging with resulting tread and lock damage—no chance for misadjustment, and the simple cam mechanism is positively non-fouling!

There's more to these new Cam-Lok forms. Full channel stake pockets with angular wedges are stronger and insure better stake retention. They're available in the single or double wedge type with or without upturned flange base. Cam-Lok Highway Forms have a cambered base end and are available for radii forming.

AIRPORT FORMS, too, now come equipped with the fast setting, self-aligning new Cam-Lok. You'll want to know more about this great new idea in highway and airport forms. Write today for your copy of the Heltzel Cam-Lok Bulletin.



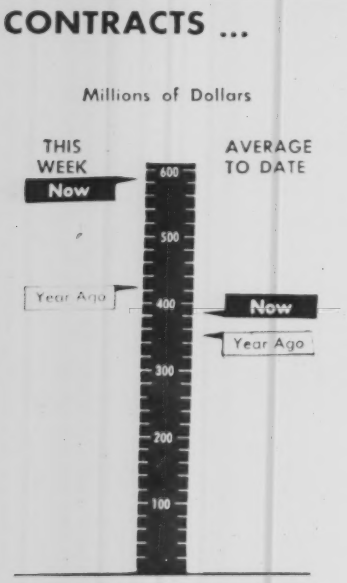
A fast quarter turn fully expands Cam-Lok aligning treads and holding them in alignment, until released.

* Patent Pending

FORM AND IRON COMPANY WARREN, OHIO

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

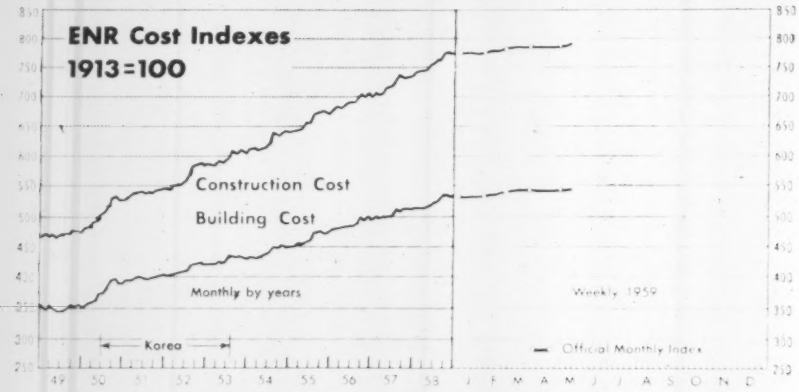
By Ownership	This Week millions	Cum. 22 wks 1959 millions	Cum. 22 wks Chge '58-'59 %
All Heavy Constr	$679.7	$8,471.3	+ 10
PRIVATE	335.6	4,322.5	+ 17
PUBLIC	344.1	4,148.8	+ 4
State & Municipal	165.5	3,017.6	— 4
Federal	178.6	1,131.2	+ 28
By Type of Work			
PUBLIC			
Waterworks	3.1	139.2	+ 46
Sewerage	10.3	260.8	+ 8
Bridges*	8.2	242.5	+ 12
Highways	83.1	1,253.3	+ 2
Earthwork, Waterways	15.6	150.2	11
Buildings, Excl. Housing	151.6	1,148.1	+ 6
Housing	31.2	294.3	+ 37
Unclassified	17.8	640.6	+ 42
PRIVATE			
Buildings			
Mass Housing	229.2	1,365.8	+ 16
Commercial	27.5	947.3	+ 6
Industrial	77.0	1,138.9	+ 39
Unclassified	1.8	159.8	21

*Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of May 21 millions	Cum. 21 wks 1959	Cum. 21 wks Chge '58-'59 %
Corporate Securities	$ 51.3	$1,167.1	38
State and Municipal:			
All Except Housing	156.9	2,776.8	— 9
Housing		30.6	— 31
Federal Loans	2.4	59.9	23
Federal Aid			
Total Nonfederal	$213.6	$4,034.3	— 22
Federal Appropriations:			
Projects in U. S.			— 100
Outside U. S.			
Total New Capital	$213.6	$4,034.3	— 29



CURRENT COST INDEXES

ENR INDEXES (1913 = 100), 20 cities' average	Week of May 21 1959	% Change from Apr. 23 1959	% Change from May 22 1958
Construction Cost	791.86	+ 1.1	+ 5.2
Building Cost	547.78	+ 0.9	+ 5.1

To convert above indexes to 1957–59 = 100: Divide Construction Cost by 248.00; Building Cost by 1.830.
1949 = 100: Divide Construction Cost by 1.701; Building Cost by 3.618.

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	April 1959 millions	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$114,593	+ 0.01	+ 1.07
By Ownership			
Private	19,353	— 0.2	+ 1.2
State & Municipal	51,187	+ 0.1	0.1
Federal	13,853	+ 0.2	0.1
By Type of Work			
Waterworks	2,718	— 0.1	+ 12.5
Sewerage	3,635	— 0.1	+ 6.6
Bridges	3,353	+ 0.01	2.1
Highways	13,177	+ 0.6	2.3
Earthwork, Waterways	11,761	— 0.5	+ 4.1
Public Buildings	20,773	+ 0.7	+ 3.1
Industrial Buildings	17,187	— 0.2	+ 3.0
Commercial Buildings	22,111	— 0.4	+ 5.2
Unclassified, Private	10,252*	+ 0.3	+ 3.9
Unclassified, Public	9,603	— 0.2	+ 3.1

*Includes private bridges, $91 million.

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1959 Apr. millions	1959 4-months	Percent Change from '58 Year Apr.	Percent Change from '58 Year Cum.
Total U. S. (ENR reported)	$1,997	$7,019	+ 86.0	+ 22.0
By Ownership				
Private	919	3,509	+ 104.0	+ 39.7
State & Municipal	730	2,914	+ 25.0	+ 5.7
Federal	348	596	+ 786.7	+ 22.1
By Type of Work				
Waterworks	30	178	+ 11.9	+ 206.9
Sewerage	60	234	+ 11.8	+ 3.0
Bridges	28	202	+ 7.3	+ 2.2
Highways	243	851	+ 2.5	+ 2.0
Earthwork, Waterways	22	96	+ 162.1	18.9
Public Buildings	380	1,519	+ 147.8	+ 21.9
Industrial Buildings	256	1,155	+ 234.1	+ 124.0
Commercial: Mass Housing	329	985	+ 127.7	+ 35.4
Other Building	257	959	+ 30.9	— 16.5
Unclassified, Private	76**	409	+ 133.3	+ 239.9
Unclassified, Public	115	427	+ 267.3	— 20.1

**Includes private bridges, $7.3 million.

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

Total U. S. (ENR report	$997	$3,405	+ 33.6	+ 19.6
By Ownership				
Private	305	1,185	+ 27.2	+ 23.5
State and Municipal	431	1,420	+ 11.8	— 1.6
Federal	261	750	+ 98.5	+ 91.0

Housing Bill a Veto Candidate

- **The Administration sees a business boom in the offing, but fears a new round of inflation will be one unpleasant side-effect.**
- **This spells bad news for Senate and House conferees preparing a housing bill loaded with big spending provisions.**

The Eisenhower Administration is having some serious thoughts about slowing down the current economic boom. These considerations could have a crucial effect on the 1959 catchall housing bill that is nearing final Congressional passage.

President Eisenhower's advisers appear convinced that another big boom is in the offing. They also are worried about a new round of inflation for both economic and political reasons.

Two factors point up the contrast in moods of the Democratic-controlled Congress and the Republican Administration:

• **Last week the House finally passed a big money version of the 1959 Housing Act.** Pushed through by the Democrats, it aims to keep the present boom in homebuilding and related industries rolling along, and perhaps even stimulate it.

• **At about the same time, the Administration was reaching for an economic brake to take "inflation" out of housing.** Quietly, Treasury Department officials passed the word to the Home Loan Bank Board to cut down on its borrowing in the money markets.

The net effect will be to put a squeeze on funds for relending to savings and loan associations. This will make mortgages in this one sector of home financing harder to get.

Housing is moving along at a brisk pace, with preliminary April figures indicating an annual rate of nearly 1.4 million starts for 1959 after seasonal adjustments (ENR May 21, p. 22).

There is no evidence that the Administration is unduly concerned about this rate. However, officials are concerned about whether to allow the federal government to be injected further into peripheral phases of the industry.

There are some sharp differences to be ironed out between the House bill and the one passed earlier by the Senate. The expectation is that the conferees, meeting this week, will be able to compromise the differences, get Congressional approval and deliver the bill to the President early in June.

Some key Republicans freely predict the President will veto whatever bill he gets. But there will be considerable pressure for him to sign.

Principal reason: FHA needs the $10 billion of new mortgage insurance authority carried in the measure. With only $1.5 billion of uncommitted authority, FHA has outstanding some $3.5 billion of agreements to insure. The new authority is vital with the homebuilding and home buying season reaching a peak.

Here's a comparison of the House and Senate bills on some major points:

• **Federal Housing Administration.** They agree on $10 billion of new authority for underwriting mortgage insurance. Of the total, $4 billion only is for fiscal year 1960 and thereafter. The other $6 billion must be used up between now and July 1, beginning of the new fiscal year, or the unused portion will lapse. This is the only portion of the housing legislation that the President will find agreeable.

The House version raises the maximum mortgage amount eligible for FHA insurance from its present $20,000 to $25,000 for single-family housing. The Senate version would increase the maximum to $25,000, but only for two-family housing units.

The Senate bill would not alter down-payment requirements, but the House bill would cut the FHA requirement to 3% of the first $13,500 of valuation, 10% of the next $4,500, and 25% for all between $18,000 and the new top of $25,000. The present schedule demands 3% of the first $13,500, 15% of the next $2,500, and 30% of the remainder up to the $20,000 ceiling.

The House bill would also raise the allowable maximum maturity period for FHA and GI loans to 35 years. Maximum maturity is now 30 years. The Senate never has considered this.

In these matters, certainly to a lesser extent than in those involving federal spending, the House-Senate conferees are expected to have little trouble reaching agreement.

• **Public housing.** This will be the most controversial item. The Senate bill provides authorization for 35,000 units. The House voted 35,000 new units annually for a four-year period. President Eisenhower wants none. The conferees, some insiders predict, will vote 35,000 a year for two years.

• **Urban renewal.** The House bill would authorize $1.5 billion in a three-year period, with no change in the current formula setting the federal share at two-thirds of a project's cost. The Senate voted a lesser annual rate but a higher total—$2.1 billion in six years, or $350 million a year. President Eisenhower asked for $1.35 billion over six years, and wants the federal share cut to 50% beginning in fiscal 1963.

• **College housing.** The Senate voted $300 million in direct low-interest federal loans for construction of college dormitories and other campus housing. Of this sum, $37.5 million would be reserved for nurse and medical intern dormitories, $37.5 million for such service facilities as student unions and cafeterias, and $125 million for academic facilities such as classrooms.

The House version calls for $400 million in such loan authority. The President recommended no new authorization for the college loan program in fiscal 1960 and thereafter, but proposed a new approach involving limited federal guaranty of construction bonds sold by colleges.

• **Housing for elderly.** The House voted $100 million for this program, an entirely new concept for federal assistance in the housing field. This is not mentioned in the Senate's bill, and is opposed by the Administration. The loan program is for nonprofit organizations willing to build apartments exclusively for persons 62 years or older. Loan terms: 98% of project value, at 3½% interest, with a 50-year maturity.

(*B&F continued p. 82*)

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Port Agency Legality Challenged

Ohio's Toledo-Lucas County Port Authority may discover that it doesn't exist, even though it has bought land, negotiated leases and collected taxes since 1955. The authority's legal existence, or lack of it, will be decided by the state's Supreme Court.

Because of a legislative technicality, says Attorney General Mark McElroy, the county resolution establishing the Port Authority in 1955 was passed before the enabling legislation.

Other actions completed prior to the enactment of state law were:

- City ordinance confirming action of the county.
- Actual establishment of the authority.
- Appointment of authority directors by Toledo and the county.
- Resolution of directors placing a one-half mill special levy on a ballot for approval of voters.

The special tax increase was subsequently approved, and approximately $2.5 million has been collected.

The issue was brought before the Supreme Court after the authority proposed the sale of $4.8 million in revenue bonds to finance construction of a grain elevator. The bonds would have been retired over 17½ years from rent receipts from a grain company.

The attorney general says the Port Authority Act itself is an improper delegation of power because it:

- Provides for taxes to be used for the benefit of a private individual.
- Grants power of eminent domain that can be used to benefit a private individual.
- Grants benefits of public borrowing to construct facilities for a private individual.

The directors of the authority deny the charges and also argue that the legal existence of the authority should have been challenged after establishment of the body, not four years later.

Since the authority was established, it has bought and leased land, and contracted for dredging, bulkheading and roadbuilding, at a cost exceeding $1.5 million.

Both Mr. McElroy and Gov. Michael V. DiSalle requested prompt action so that the legislature still in session can enact corrective measures.

Pipeline to Stir Florida Growth

Next week Houston Corp. of St. Petersburg, Fla., will open a $163-million transmission line to supply Florida with natural gas. The line is expected to help Florida's efforts to attract new industries to the state.

Several gas-consuming companies, particularly in the glass and chemical industries, have recently built or planned new plants in Florida. Millions of additional dollars are expected to be spent on plant construction by companies using natural gas for processing and fuel.

Houston Corp. plans to spend an additional $41 million to increase capacity of the transmission line and another $23 million to expand gas distribution facilities in eight Florida cities. Thirty-eight other cities will spend a total of $40 million to boost their own gas distribution facilities.

The 24-in. line will carry gas from fields in south Texas to all of peninsular Florida. Only northwest Florida is now supplied by pipeline.

Engineering work on the pipeline began in April, 1954. Houston Corp. was formed in March, 1957, with the express purpose of supplying natural gas to Florida. Its two subsidiaries, Coastal Transmission Corp. and Houston Texas Gas & Oil Corp., gather and transmit the natural gas.

The main transmission line is 1,477 miles long. An additional 1,132 miles of lateral pipe for gathering and distributing the gas brings the over-all network of 2,609 miles.

Barnard & Burk Pipeline Engineering, Inc., Baton Rouge, La., did the engineering work on the pipeline. Contractors were Hurbert Construction Corp., Birmingham, Ala., and Midwestern-Walco Contractors—a joint venture of Mid-Western Constructors, Inc., and Walco Engineering & Construction Co., both of Tulsa.

Contractor-Engineer Cited For Informational Efforts

F. H. McGraw & Co., Hartford engineering-construction company, received one of the U. S. Chamber of Commerce's annual awards for firms doing "an outstanding job of internal and external communications" in 1958. McGraw is the first such firm to win one of the awards.

The company was cited for its "well rounded employee communications program, highlighted by a company magazine . . ."

Labor Bill: Outlook Gets Dimmer

- **AFL-CIO opposition of the Kennedy bill, Hoffa's strike threat, and Congressional sentiment may bring a stiffer bill from the House.**
- **Result: Chances for labor reform legislation are growing dimmer.**

Before the Senate passed the Kennedy-Ervin labor reform bill last month, it performed extensive surgery. Now the AFL-CIO has had time to examine the patient carefully. Its conclusion: The operation was downright harmful.

"Anti-union proposals presented in the guise of labor reform" is the way the federation's executive committee described the bill last week. It promised a vigorous fight in the House of Representatives to get the kind of reform legislation the AFL-CIO wants.

The Kennedy-Ervin bill is now before the House Labor Committee, along with a dozen other labor reform proposals—none of them to the federation's taste. The AFL-CIO construction unions, huddling before the full AFL-CIO Council met, came to the same conclusions on the bill.

The federation's strong stand against the present reform proposals could spell the end of all hope for major labor legislation at this session of Congress.

Should the liberal majority rally to Labor's side against the smaller—but powerful—conservative coalition of Republicans and Southern Democrats, a stalemate could result. The differences, however, are not beyond compromise.

• **The objections**—AFL-CIO has two major objections to the measure: the bill of rights; and the broad powers delegated to the Secretary of Labor.

The controversial bill of rights was sponsored by Sen. John L. McClellan (D., Ark.), chairman of the Senate Labor Rackets Committee. It guarantees a union member freedom of speech and assembly in union meetings, freedom from union reprisals for criticism and the right to sue union officers.

Particularly distasteful to Labor leaders is the $10,000 fine and two-year jail sentence for a union official violating these rights. The bill of rights, says the federation, is an invitation to lawsuits, a source of conflict between federal and state law, an improper interference with legitimate union activities and a threat of probably unconstitutional criminal sanctions. David Dubinsky, head of the International Ladies' Garment Workers Union (AFL-CIO), charges the only right in the bill of rights is the "right to wreck unions."

The bill would require the Secretary of Labor to regulate reporting of union funds and empower him to report on union administration, finances, and officers' salaries to union members for "proper cause." He would also have power to exempt unions with less than 200 members from filing reports.

The AFL-CIO contends this grants "too much discretionary power" to the Secretary of Labor. The original Kennedy-Ervin bill, backed by the AFL-CIO, granted these same powers to the Secretary of Labor, but AFL-CIO lobbyists hoped to tone them down when the bill reached the House.

Referring mainly to these two provisions, the AFL-CIO Executive Council said: "Amendments adopted in haste or anger on the (Senate) floor transformed the bill into a measure which no trade union official could conceivably support and which the Executive Council emphatically now states that we will not support."

The AFL-CIO made it plain that it won't stand by without fighting for the labor reform it wants. Its Executive Council instructed George Meany to appear before the House Labor Committee to give it a "point-by-point analysis of the weaknesses and dangers in the bill." At the same time, union lobbyists will be hard at work.

• **House may be tougher**—Chances are good that any labor reform bill passed by the House will be even stronger than the Senate's version. House sentiment leans toward legislation that would curb labor much more than the AFL-CIO wants. House Labor Committee Chairman Graham Barden (D., N. C.) is promoting a "licensing" bill. It won't go to the House floor for several weeks.

Teamster President James Hoffa may have almost as much responsibility for tougher labor legislation as Representative Barden. The reason is Mr. Hoffa's threat last week of a nation-wide strike if Congress put unions under the anti-trust laws. Though he quickly denied the statement, the damage was done as far as the AFL-CIO is concerned. Mr. Hoffa had reminded Congress and the public that he and his union are still around.

House Republicans can be expected to fight for the stronger reform legislation asked by President Eisenhower. House Minority Leader Charles Halleck, of Indiana, has pledged a floor fight focusing on three areas where the Administration feels the Kennedy-Ervin bill is weak—tightening bans on organizational picketing, plugging loopholes in current laws barring secondary boycotts and returning to the states more authority over Labor disputes in the "no-man's land." (The area that the National Labor Relations Board refuses to consider and that states are forbidden by court decisions to consider.)

• **Construction in middle**—The AFL-CIO construction unions are caught in the middle of the reform fight. In the Kennedy-Ervin bill they have, for the first time, amendments specifically designed to remove some of the craft unions' objections to the Taft-Hartley Act. But the construction union leaders found too many objectionable features that outweighed the benefits from Taft-Hartley changes.

Kennedy-Ervin provisions favored by the building trades include:

• **Pre-hire clause** that permits the union and employer to negotiate a labor contract before the work force is assembled on a job.

• **A seven-day union shop** clause that requires workers to join a union within seven days after employment instead of the present 30 days.

• **Changes in hiring provisions** that would allow employers to advise unions of job openings and provide for minimum training and experience.

(Labor continued p. 86)

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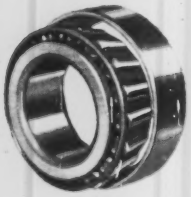

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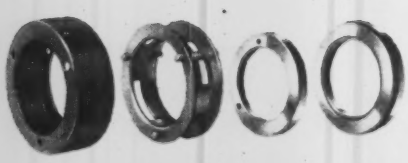
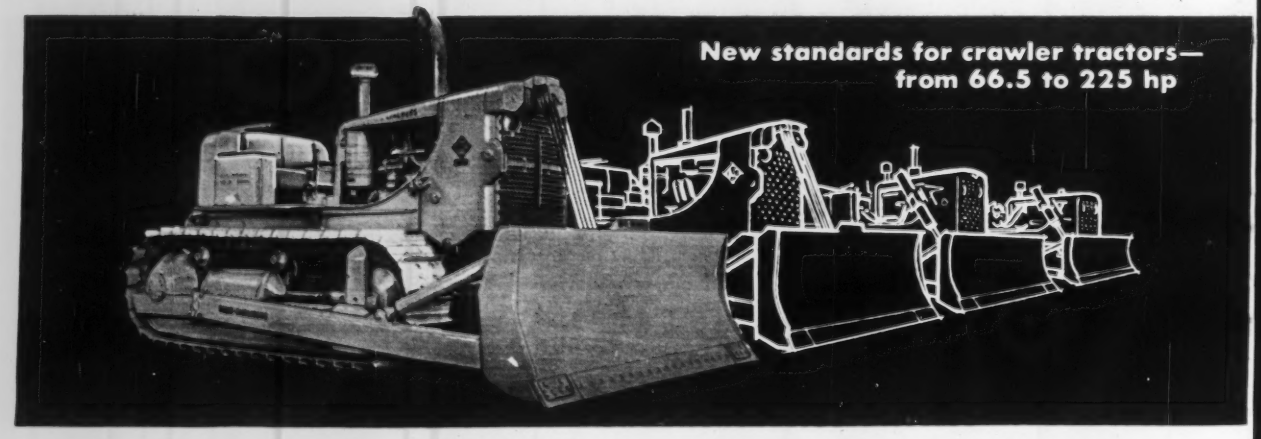
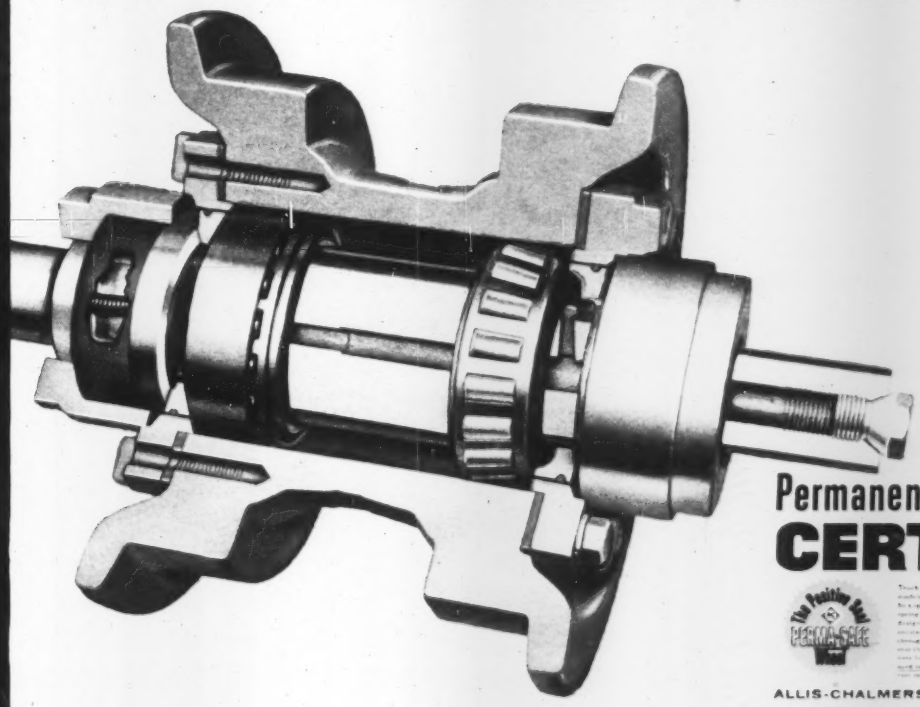


The "Positive Seal" that makes permanent lubrication possible is effected by two steel sealing rings working in combination with the tapered roller bearings. These two rings, smoother than glass, are held firmly together by strong steel coil springs. One seal remains stationary; the other turns with the truck wheel. These seals are micro-finished to near perfect flatness. Their surfaces fit together so precisely that nothing can get through . . . a perfect seal.



Safe, permanent lubrication of truck wheels, front idlers and support rollers requires seals that will keep all moisture and other foreign materials out . . . the lubricant in. Only Allis-Chalmers offers seals which are positive because of their use in combination with tapered roller bearings. The Allis-Chalmers Positive Seal, tapered roller bearing design has been proved in the field through more than 20 years . . . through millions upon millions of operating hours. When introduced in 1938, this outstanding design replaced bushing-type assemblies similar to those used today in other tractors. Allis-Chalmers abandoned bushing-type truck wheels because, in its opinion, they could not be positively sealed.



Permanent Lubrication CERTIFIED

ALLIS-CHALMERS MANUFACTURING CO.

Your Allis-Chalmers dealer will be happy to help you estimate the savings in time and material that are yours with Allis-Chalmers permanent lubrication. See him today. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS

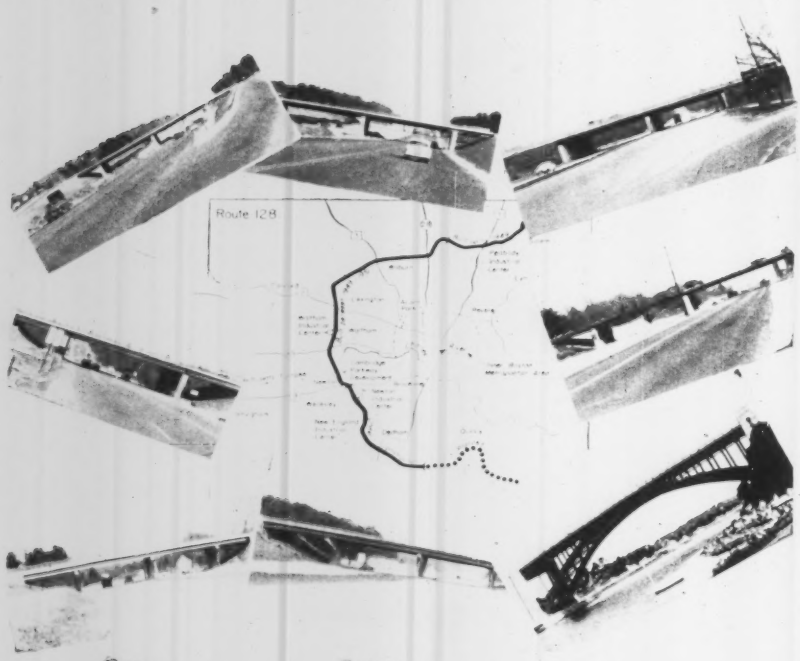
...power for a growing world

Lubrite®

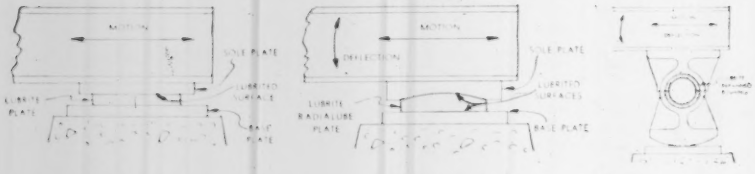
SELF-LUBRICATING SECURITY

SPECIFIED FOR BRIDGES ON THE BOSTON CIRCUMFERENTIAL HIGHWAY

ONE OF MASSACHUSETTS' MOST UP-TO-DATE, LIMITED ACCESS SUPER HIGHWAYS

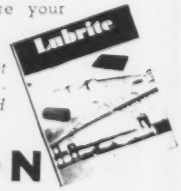


3 BASIC LUBRITE ASSEMBLIES



Lubrite offers many distinct advantages to any bridge, overpass, building, or other construction where the problems of expansion, contraction and or rotation of a structural member are factors in the design. Specifically, Lubrite offers simplified design, low known co-efficient of friction, reduction in construction costs and the virtual elimination of maintenance in bearing assemblies. Lubrite's fifty years of successes in all types of installations are your assurance of better results and longer life.

Send for this free 20 page Lubrite Manual No. 55 — it contains complete information, technical data and specifications about Lubrite Self-Lubricating Expansion Plates and Bushings. Write today!



LUBRITE DIVISION
MERRIMAN BROS., INC.
191 AMORY STREET, BOSTON 30, MASS.

Worker's Choice

Contractor cannot force sub's men to join union

It is an unfair labor practice for a building trades union, and for a contractor under pressure from the building trades union, to try to force a subcontractor's employees into the union. But the contractor can refuse to hire a sub whose employees are not members of the building trades union.

The first case is discrimination against employees, forbidden by the Taft-Hartley Act. The second is discrimination by one employer against another, no violation of the labor law.

The U. S. Court of Appeals for the District of Columbia made this new ruling in upholding a decision of the National Labor Relations Board.

The NLRB case arose from two contracts, one in 1954 and the other in 1955, between Local 3 of the operating engineers (AFL-CIO) and two California chapters of the Associated General Contractors of America, which were labor-negotiation representatives for the general contractor on a Travis Air Force Base project. Both contracts contained "union security" subcontract clauses stating that all terms of the agreement apply to any subcontractors hired by the prime contractor.

While the 1954 agreement was in effect, the contractor hired a subcontractor, St. Maurice, Helmkamp and Musser that had four employees covered by an agreement with a local San Francisco union. The operating engineers struck, charging that the four Musser employees did not come under the agreement between Local 3 and the AGC. Under this pressure, the contractor had the four Musser employees suspended and replaced them with employees covered by the agreement with Local 3.

The NLRB ruled that the operating engineers and the contractor violated the unfair labor practice provisions of Taft-Hartley in discriminating against the Musser employees on the basis of their membership in another union.

Later, with the 1955 agreement in effect, the contractor refused to subcontract to Musser on the grounds that Musser would not abide by the union security subcontract clause in the AGC-operating engineers contract. In this case, the NLRB ruled, the contractor had not violated the Taft-Hartley Act. There was discrimination by one employer, the prime contractor, against another, Musser. But Taft-Hartley forbids discrimination only against employees, the NLRB decided.

OFFICIAL PROPOSALS

Bids: June 4, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M. advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 4th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 535 Broadway, Albany 1, New York						
Albany	FARC 59-46	Altamont-Voorheesville, SH1541 Proj. S-538-3	0.30	Asph. Conc. Pavt. = 0.27 Mi.; Misc. Work = 0.30 Mi.; Br. No. 1, R.C. Closed Box, 24° Sp.	$5,000 Plans $5	$87,000
Albany & Saratoga (Rte. 9)	FARC 59-44	Loudon Crescent, SH5555; Loudon Crescent Pt. 2, SH5614; Clifton Park Crescent Pt. 2, SH5609 Proj. F-639-14	2.09	Asphalt Conc. Pavt.	$35,000 Plans $5	627,000
Albany (Rtes. 9 & 7)	T.S. 59-8	Loudon Road Pt. 2, SH119; Troy-Schenectady Pt. 3, SH604; Troy-Schenectady Pt. 4, SH600; Loudon-Crescent, SH5555	3.13	Traffic Signs	$3,500 Plans $5	63,000
DISTRICT No. 2, Lacy Kellum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery (Rte. 10)	R.C. 59-48	Palatine Bridge-Stone Arabia, SH517; Stone Arabia-Fultonville Pt. 1, SH1504	6.49	Asph. Conc. Type 1A, Pavt.	$9,000 Plans $5	157,000
Montgomery (Rte. 5)	R.C. 59-49	St. Johnsville-Nelliston, SH5109 Nelliston-Palatine Br. SH5123	3.50	Asph. Conc. Type 1A, Pavt.	$10,000 Plans $5	175,000
Oneida (Rte. 126)	FARC 59-19	Whitesboro-Trenton, SH5325 Proj. S-243-3	0.37	Asph. Conc. Ty. 1A Pavt. Prestress. Conc. Beam Br. 2 Sp. 140'	$10,000 Plans $5	173,000
DISTRICT No. 3, Earle E. Towlson, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cortland, Onondaga, Oswego & Tompkins	R.C. 59-51	14 Various Highways in District No. 3, on Routes 11, 13, 41A, 48, 103, 13 and 13B	32.24	Subsealing Cement Conc. Pavement	$15,000 Plans $5	268,000
Cortland & Onondaga (Rtes. 11 & 281)	FARC 59-69	Lafayette-Tully, SH5316 Preble-Tully Center Pts. 1 & 2 Fash 45-3 Proj. F-215-9; S-564-1	5.06	Asph. Conc. Ty. 1A Pavement	$8,000 Plans $5	157,000
Onondaga (Rte. 11)	R.C. 59-54	Syracuse-Lafayette, SH5365; Lafayette, SH76 Lafayette-Tully, SH5316	10.20	Asph. Conc. Ty. 1A Pavt.	$23,000 Plans $5	406,000
Onondaga (Rte. 11)	FARC 59-45	Cicero-Brewerton, SH5239 Proj. F-466-1	0.23	Asph. Conc. Ty. 1A Pavt.	$2,000 Plans $5	38,000
Seneca (Rte. 414)	FARC 59-68	Reservation Road-Fayette, S.H. 320 Proj. S-271-2	5.72	Asph. Conc. Ty. 1A Pavt.	$10,000 Plans $5	185,000
Wayne (Rte. 104)	FARC 59-50	Sodus-Alton, SH5032; Alton-Wolcott Pt. 1, SH1516 Proj. F-162-9	7.80	Asph. Conc. Ty. 1A	$15,000 Plans $5	263,000
DISTRICT No. 4, R. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston (Rte. 36)	FARC 59-42	Caledonia-Mount Morris Pt. 1, SH5503 Proj. S-172-3	6.03	Asph. Conc. Ty. 1A, Pavt. = 6.01 Mi. Miscell. Work = 0.02 Mi.	$14,000 Plans $5	251,000
Monroe	FASS 59-13	Union Street Co. Rd. 37 Proj. S-508-1	0.23	Asph. Conc. Pavt. = 0.15 Mi.; Misc. Work = 0.08 Mi. Comp. I-Beam Bridge 2 Sp. 109'	$7,200 Plans $5	130,000
Monroe	T.S. 59-6	Lake Ontario State Parkway, Sects. A & B	10.32	Traffic Signs & Delineators	$5,000 Plans $5	88,000
Monroe (Rte. 104)	FARC 59-57	Ridge, Part 1, Rochester-W. Greece, SH6 Proj. F-402-10	2.27	Asph. Conc. Ty. 1A Pavt. = 2.21 Mi. Misc. Work = 0.06 Mi.	$8,000 Plans $5	154,000
Monroe	M 59-5	Bridge I-143, Winton Road Over Barge Canal	....	Cleaning & Painting Bridge	$250 Plans $10	4,500
DISTRICT No. 5, E. G. H. Voss-mann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus	P.S.C. 18479	Elm Street Extension over Penna. Railroad in Portville	0.30	57 Cem. Conc. Pavt. 20' Wide, R.R. Sep. Comp. W.F. Beam 3 Sp. 132'	$14,000 Plans $5	266,000
Cattaraugus (Rte. 17)	R.C. 59-47	Carrollton-Killbuck, SH5418	1.55	Asph. Conc. Pavt.	$11,000 Plans $5	202,000
DISTRICT No. 6, James H. Thomas, District Engineer, State Office Bldg., 50 West Main Street, Hornell, New York						
Steuben	FASS 59-9	Morgan Bridge Co. Rd. 11 Proj. S-540-2	0.81	Rpl. Misc. with Double Surf. Treat. Pavt., Prestress. Conc. Bridge 1 Sp. 244'	$20,000 Plans $5	377,000
Steuben (Rte. 15 & 17)	FASH 59-10 FASH 59-11P FARC 59-56	Painted Post-West City Line of Corning Pt. 1, Painted Post-West City Line of Corning Pt. 2, Fash 57-11; Corning-Painted Post, SH5026, 5211 Proj. F-170-2; 215-11; & F-569-10	2.70 1.99 Var.	Asph. Conc. Pavt. = 4.11 Mi.; Misc. Work = 0.58 Mi.; 1 R.C. Box Br. 2 Sp. 40'; 1 W.F. Comp. Beam Bridge 9 Sp. 573' 8" w. 2 Hy. Segs. W.F. Comp. Beams 1 Sp. 108.6' and 1 Sp. 108.6'; 1 R.R. Sep. Comp. Steel Girder 3 Sp. 250'	$135,000 Plans $5	6,069,000
Tioga (Rte. 38)	FARC 59-55	Newark Valley-Berkshire, Pt. 1, SH1057; Newark Valley-Berkshire Pt. 2, SH1076; Richford-Harford Mills, SH1452 Proj. F-903-2; and F-427-10	8.39	Asp. Conc. Pavt. = 8.17 Mi.; Misc. Work = 0.02 Mi.; 1 W.F. Comp. Beam Br. 2 Sp. 120'; 1 R.C. Twin Box Br. 24' Sp.; Widen 3 Exist R.C. Slab Brs. 20' SP., 22.8' Sp. & 22' Sp.; Widen Exist. 30' Sp. I-Beam Bridge; Rehabilitate Exist. 85' Sp. Plate Girder Brs.	$118,000 Plans $5	2,139,000
DISTRICT No. 7, Robert W. Sweet, District Engineer, 317 Van Duzee Street, Watertown, New York						
Franklin, Jefferson, Lewis & St. Lawrence (Rtes. 190, 289, 26 A & 56)	R.C. 59-58	Br. No. 1, SH317; Br. No. 1, SH1150; Br. No. 1, SH1365; Br. No. 1, SH1190; & Br. No. 1, SH1199; Br. No. 1, SH1140	....	Cleaning & Painting 6 Bridges	$1,000 Plans $5	18,000
DISTRICT No. 9, Joseph C. Fredrick, District Engineer, 21 Fredrick Street, Binghamton, New York.						
Broome (Rte. 17)	FARC 59-59	Park Bridge, SH127 Binghamton-Windsor Pt. 2, SH5022 Proj. F-211-21	1.92	Asph. Conc. Pavement	$11,000 Plans $5	212,000
DISTRICT No. 10, M. E. Gora, District Engineer, 325 W. Main Street, Baldwin, L. I., New York						
New York	FAHRD 59-1	Harlem River Drive: East 125th St. to West 145th St.	0.40	Bulkhead Wall, Fill & Misc. Work Incld. Steel & Conc. Platform Spanning Subway Tunnel	$100,000 Plans $5	1,785,000
Suffolk (Rte. 110)	FARC 59-10	Amityville Village, Broadway, SH1633; Huntington Amityville Pt. 2, SH1219 Proj. F-267-5)	2.12	Demolition of Buildings	$9,000 Plans $5	168,000

Any projects in this letting that are on the Federal Aid highway system are subject to the provisions of the "Federal Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wages) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of the set in good condition within 10 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the State of New York, Commissioner of Taxation and Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
CHIEF OF PUBLIC WORKS

Bids: June 16, 1959.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS FOR THE FURNISHING AND DELIVERY OF INTAKE GATE HOISTS FOR WATERWAYS
SPECIFICATIONS NO. PA-N-24011
NIAGARA CONTRACT NO. NP-29

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof, F.O.B. Echota Siding, Niagara Falls, New York, of two intake gate hoists for the dual conduits for the waterways in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on June 16, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for furnishing and delivery of two 250 ton capacity, four drum intake gate hoists complete with appurtenances for the two intake gates at the waterways gate houses. First delivery will be required March 1, 1960.

All work shall be completed on or before May 1, 1960.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of ten ($10.00) dollars per initial set of contract documents, and five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Holl & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-24011

Bids: June 26, 1959.

Georgia Ports Authority Construction of General Cargo Terminal Brunswick, Georgia

NOTICE TO BIDDERS: Sealed proposals for the construction of a General Cargo Terminal will be received by the Georgia Ports Authority in the Board Room of the First National Bank of Brunswick, Gloucester Street, Brunswick, Georgia, until 2:00 p.m., Eastern Standard Time, on the twenty-sixth day of June 1959, at which time and place the bids will be opened publicly and will be read aloud.

The project will include a concrete marginal wharf, transit shed, railroad tracks and trestle, grading and paving, dredging of, vated water storage tank and utilities.

The Contract Documents, including Specifications and Drawings, may be examined at the Georgia Ports Authority office of the Executive Director, Savannah State Docks, Garden City Terminals, Savannah, Georgia, or at the office of the Engineers, Fay, Spofford & Thorndike, Inc., 11 Beacon Street, Boston, Massachusetts, on and after the third day of June 1959, every weekday except Saturdays and holidays between the hours of 9:00 a.m. and 4:00 p.m. Contractors desiring to bid on this work may obtain Plans and Specifications upon payment of One Hundred Dollars ($100.00) for each set. Deposits will be refunded to bidders only upon the return of Plans and Specifications in good condition within ten (10) days after the opening of bids. Each bid must be accompanied by a certified check or bid bond in the amount of Fifty Thousand Dollars ($50,000.00). A performance bond in the full amount of the contract will be required of the successful bidder.

The right is reserved to waive any informalities in or to reject any or all bids, and to authorize only a portion of the work as the public interest may require.

GEORGIA PORTS AUTHORITY
By: Robert C. Norman, Chairman

Bids: June 4, 1959

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 4th day of June 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 153 Broadway, Albany 1, New York		
Albany	FASH 59-8 FAC 59-5	Albany South Side Route, Pt. 1 City of Albany Fuller Road Alternate Proj. U-1132-1

Miles	Type	Deposit	Estimated Cost of Work
0.56	9" Cem. Conc. Pavt. 2 @ 24' Wide	$26,000 Plans $5	$181,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115, "Prevailing Rate of Wages," Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope, with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft, or certified check payable to the order of the State of New York, Commissioner of Taxation and Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: June 11, 1959

Bethlehem Authority Bethlehem, Pa.

Sealed proposals will be received until 4:00 P.M., June 11, 1959, for construction of 15,000 feet of 15" to 36" R.C.P. trunk sanitary sewer, 633-foot inverted siphon under Lehigh River, and appurtenances.

For particulars, address:

Bethlehem Authority
6 West Broad St.
Bethlehem, Pa.

U. S. Government

Sealed bids for central air conditioning, etc., at the Penn A.C. Building, 225 South 18th Street, Philadelphia, Pa., will be received until 2:00 P.M., EDST, June 17, 1959, and then publicly opened. Bidding material may be obtained after 5-22-59 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

Bids: June 4, 1959

Notice to Contractors

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Standard Time on June 4, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CROSS BRONX EXPRESSWAY, EDWARD L. GRANT HIGHWAY TO WALTON AVENUE, F.A.I. ROUTE 511, PROJECT I-1084(27), ITEM 53, BRONX COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-139.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. M. E. Goal, District Engineer, New York State Department of Public Works, 225 West Main Street, Babylon, Long Island, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $11,150.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the State of New York, Commissioner of Taxation and Finance, for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: June 16, 1959

Contract NYA-650.079

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
TOLL COLLECTION EQUIPMENT
PARKING LOTS NOS. 1, 2 AND 4

Sealed proposals for furnishing and installing toll collection equipment for Parking Lots Nos. 1, 2 and 4 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 16, 1959, at which time said proposals will be opened and read in Room 1105.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not refundable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, May 28, 1959.

Bids: June 22, 1959

Notice is Hereby Given

NOTICE IS HEREBY GIVEN that sealed proposals for the "Midtown Underground Garage" will be received by the City of Rochester, Purchasing Agent, at his office, Room 30, City Hall, No. 20 South Fitzhugh Street, Rochester 14, N.Y., until 11 o'clock, Eastern Daylight Saving Time, on June 22, 1959, at which place and time they will be publicly opened and read aloud. The proposals shall be for furnishing all labor, materials, equipment, facilities, transportation and services necessary for and or reasonably incidental to the completion of all work in accordance with the Drawings, Specifications and Other Contract Documents prepared by Victor Gruen Architect A.I.A. for the City of Rochester. The work is divided into four separate contracts, each to include portions of the complete work, as follows:

1. General Construction Contract.
2. Electrical Work Contract.
3. Heating and Ventilating Contract.
4. Plumbing Work Contract.

Contractors may submit proposals for either one or more of the contracts.

These Plans, Specifications and other Contract Documents may be examined at the office of Victor Gruen and Associates, 2 West Thirteenth Street, New York 11, N.Y., and may be examined and copies thereof may be obtained at the office of the Purchasing Agent. One copy of the said documents may be obtained upon payment of $100.00 Deposit. Any Bidder returning such copy in good condition within thirty (30) calendar days following the opening of Proposals will be refunded $100.00 and any non-bidder so returning such copy will be refunded $50.00.

The City of Rochester reserves the right to reject any or all Proposals and to waive any informalities, should the best interest of the City thereby be promoted.

Proposals shall be made on the form provided in the Contract Documents, and each proposal shall be accompanied by a certified check made payable to the City of Rochester, N.Y., in an amount not less than five per cent (5%) of the total amount of the proposal, conditioned that the bidder will execute the Contract and deliver the required Performance Bond for the proposed work within ten (10) calendar days after the date of written notice that his proposal has been accepted. For proposals with total amounts in excess of $2,000,000 a bid bond in the amount of five (5) per cent of the amount of the proposal, in proper form executed by a surety company acceptable to the City, will be accepted in lieu of the aforesaid certified check.

A bidder may not withdraw his proposal within forty-five (45) calendar days after the opening of proposals, but may withdraw his proposal at any time prior to the scheduled time for the opening of proposals.

A Contractors Information Meeting will be held at 10:00 A.M. Eastern Daylight Saving Time, on June 8, 1959, in the Council Chamber of the City Hall, Rochester, New York.

Kenneth E. Donnelly
Purchasing Agent
City of Rochester

May 14, 1959

Bids: August, 1959

Invitation for Bids—No. YS-2-9

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering the following goods, equipment and materials either f.o.b. Contractor's supplying point or c.i.f. Bangkok, Thailand, for the Bhumipol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents for:

The fabrication of approximately 18 million kilograms (41 million pounds) of steel into penstocks and outlet pipe, including the furnishing of all necessary material, labor and equipment. It is required that the various pieces be furnished (as approximately 1.50 m to 4.15 m inside diameter by 7.315 m length (4'9" to 13'7" inside diameter by 24'0" length) in varying thickness from 5/8" to 1 1/4". Several bends including some of the reducing type and one bifurcation are required. Transportation facilities are not adequate for these overall dimensions, necessitating a field fabrication plant at the Dam Site. The dam and power plant are located approximately 420 kilometers or 260 miles north of Bangkok, Thailand.

Bids will be opened early August 1959. Copies of Contract Documents, Invitation for Bids No. YS-2-9, may be obtained by qualified Bidders on written request addressed to:

Royal Irrigation Department
Attention: The Liaison Engineer
c/o Engineering Consultants, Inc.
1440 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order payable to the Royal Irrigation Department, in the amount of U.S. $10.00 for each copy of the Contract Documents requested. The remittance is nonrefundable.

M. L. Nujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

July 2, 1959

Notice to Contractors

Sealed separate sealed bids for construction of Additions to Filter Plant will be received by Purchasing Agent at City Hall, New Britain, Conn. until 11:00 A.M. Eastern Daylight Saving Time, July 2, 1959 and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Form of Performance and Payment Bond may be examined at Office of Purchasing Agent, City Hall, New Britain and copies thereof obtained upon payment of $50.00 for each set. Upon the return of such set in good condition this payment will be refunded within 10 days of the opening date.

CITY OF NEW BRITAIN
OWNER

reserves the right to reject any or all bids.

Each bidder must deposit with his bid a certified check drawn by him on a State Bank and Trust Company or a National Bank located in Connecticut, to the order of The City of New Britain, in an amount equal to 5% of his bid or submit Bid Bond in like amount.

Attention of Bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

Each bidder is warned that all the information called for in the bid document must be furnished.

By
OTTO R. WINTER
Purchasing Agent

May 18th, 1959
(Date)

Date: June 17, 1959

Washington Suburban Sanitary Commission Contract No. 2311-W Potomac River Water Supply Development

Sealed proposals for the second contract on the Potomac River Water Supply Development at Watts Branch, Montgomery County, Maryland, which involves the construction of filter units, flocculation and coagulation basin, head house, completely equipped, filter pertinent structures and site improvement, will be received at the office of the Secretary of the Washington Suburban Sanitary Commission, 1017 Hamilton Street, Hyattsville, Maryland, until Wednesday, June 17, 1959, at 12:30 P.M. Eastern Daylight Saving Time, at which place and time they will be publicly opened and read. Plans and Specifications for this contract may be obtained from the office of the Chief Engineer of the Commission upon payment of $100.00, which is not refundable.

T. Earle Bourne, Chairman
Frank L. Hewitt, Jr., Vice-Chairman
J. Norman Veet
James B. Bland
Willard A. Morris
L. S. Ray
Commissioners

Attest:
John T. Bonifant
Secretary

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

U. S. Government

BRIDGE CONSTRUCTION—U. S. Army Engineer District, Memphis, Corps of Engineers, P.O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 1:30 P.M. C.S.T., 25 June 1959, and then publicly opened, for constructing two county bridges, Round Pond Interior Drainage, St. Francis River, Arkansas. $15.00 deposit required on plans. Information on request.

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

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SEND COPY: to Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, New York.

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Subject to Agency Commission.

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Box numbers—count as 1 line.

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Contracting company established 40 years doing highway and other construction involving grading, paving, bridge, caisson, and tunnel construction in multi-state operations will employ General Manager and chief executive officer.

The man who qualifies will be capable of directing estimating, bidding, subcontracting and procurement, planning and execution of work, as well as handling bonding, banking, financing and public relations activities, through having the following qualifications:

1. **Record of successful profitable operations in a similar position.**
2. **Engineering education and certificate of registration.**
3. **Ability to take charge of an established organization and quickly gain respect and confidence.**
4. **Personality that creates an immediate impression of the poise that is created by contact with large scale operations.**
5. **Age 40 to 50 years.**

Compensation in line with above requirements, plus profit sharing incentive and stock option.

Please submit resume which will be held in strict confidence. Resumes that indicate qualification will be followed by interview.

JAMES H. MARKS MANAGEMENT CONSULTANT
811 FISHER BUILDING • DETROIT 2, MICHIGAN

WANTED

Two Graduate Engineers with four to six years experience for Municipal Engineering in rapidly growing community of 36,000 now expanding and upgrading its Bureau of Engineering. Liberal vacation, sick leave, Hospitalization and life insurance programs under a Civil Service System. Unexcelled opportunity for advancement.

Prefer some sanitary and/or municipal experience with elegibility for Professional Registration in North Dakota.

Send Resume and salary desired to:

DIRECTOR OF PUBLIC SERVICE
P. O. Box 900
GRAND FORKS, NORTH DAKOTA

BUILDING DESIGNERS

Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to

STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa

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Do you now call on contractors, sugar refiners, Oil & America-wide mechanical fields, textile manufacturers, etc.? Are you a specialist in one of these fields: Jetting, Dust Control, Vacuum, Water, Suction, etc.? A few territories remain still open. State lines carried and area covered in first letter. Replies confidential. Write

RW-1509 Engineering News-Record
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CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Asst. Prof. of Civil Engineering to teach fluid mechanics. Applicant must have MS in CE. Write to John A. Oakey, N. D. State College, Fargo, N. D., giving personal record and minimum acceptable 9 months salary.

Town Engineer—Southington, Conn., population 17,500, semi-rural with rapid growth and all the problems you want to tackle. Must have broad municipal experience and qualify to register in Connecticut. Recently-established position with July 1 budget for staff of three plus summer help. Up to $8,000 for best man. Resume to Director of Finance, Town Hall.

Hydraulic Engineer with experience in river hydraulics, stream gaging and analysis of hydrologic data needed to fill vacancy in hydraulic Data Section. Salary range $6600 to $7800. Opportunity for advancement. Send resume to Chief Engineer, Indiana Flood Control and Water Resources Commission, 1330 West Michigan Street, Indianapolis 7, Indiana.

• POSITIONS VACANT

Municipal Building Inspector for administration of Building Code, Zoning and Housing Ordinances. Graduate engineer experienced in building construction and municipal ordinance enforcement preferred. Good working conditions. Salary $6,075-$8,232. Submit qualifications to Superintendent of Public Works, Municipal Building, Montclair, N. J.

Chief Engineer for medium size growing Reinforcing Fabricator. Excellent opportunity for right man. All modern facilities. P-1714, Engineering News-Record.

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Experienced Architects and Architectural Draftsman. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Sanitary Engineer to direct Division of Sanitation with generalized program in well established County Health Department. Population: 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Cattaraugus County Health Department, 302 Laurens Street, Olean, New York. Salary: $6,561-$7,620.

Graduate Engineer for key position. Minimum of 8 years experience in estimating, purchasing and expediting in heavy, commercial and industrial building construction. Must have administrative ability. Location in Nebraska-Kansas area. Send complete resume, references and recent photograph. P-1589, Engineering News-Record.

Plant Manager—Structural fabricating shop Pittsburgh area. Must know labor relations, shop and drawing room practice. Salary open. Reply in detail to P-1613, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Assistant City Engineer — Age—Under 50— Civil Engineer College Degree—Two (2) Years Experience. Experience in administration, supervision over men, maintenance work planning, job assignment and plan and design of streets and parks desirable. Write City Clerk, City Hall, Cumberland, Maryland, before June 15, 1959.

Supervising Architect—Capable of managing large scale Apartment Developments. Forward Complete resume. P-1761, Engineering News-Record.

Wanted immediately highway construction superintendent for concrete structures work. Excellent opportunity for a man to take charge of project which will last approximately eighteen months. Write giving details concerning past record, references, etc. Salary open. Project located in Kentucky. P-1536, Engineering News-Record.

Instrument or Electrical or Piping Engineer. Engineering and construction firm has position for experienced estimator to Broaden his experience by assisting the coordination of design, estimating, purchasing and installation of instrument systems for process type plants. Contracting firm experience preferred. Salary open. Chicago suburban location. Send resume to Mr. W. A. Wecker, Panellit, Inc., 7401 N. Hamlin, Skokie, Illinois.

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OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

• POSITIONS VACANT

Wanted: Street Maintenance Superintendent. Applicant should have ten years experience in the supervision of street construction and maintenance activities; and graduated from high school or trade school, preferably supplemented by college level courses in civil engineering. Salary range $445-$580. Address applications to Personnel Department, City Hall, San Antonio, Texas.

Service Manager-Demonstrator, for leading shovel account in Northern New Jersey area. Excellent opportunity. Replies strictly confidential. P-1765, Engineering News-Record.

Construction Manager to be second man in growing gen. const. firm with $2.5 million annual volume. Experienced in all managerial and field phases of building const.—schools—public bldgs.—semi-heavy const.—no specialization. Degree necessary. Long hours—hard work—headaches. Must be a pacesetter, pusher, and proven profit maker. Bonus and eventual ownership participation—opportunity to invest but not required. Send resume and salary to P-1774, Engineering News-Record.

Construction Superintendent experienced in all phases of heavy construction to take complete charge of field operations for small, growing firm. Good chance for able man to make permanent connection. Principal work, bridges, sewage and water treatment plants in New York, New Jersey, Conn. P-1755, Engineering News-Record.

The U. S. Army Transp. Suppl. and Maint. Command, located at 12th and Spruce St., St. Louis, Mo. has vacancies for the following Engineering positions: Aero. Develop. Eng., Aero. Eng., Mech. Eng., Electronic Eng., Aero. Power Plant Eng., Materials Eng., and Gen. Eng. Salaries range from $5,430 to $11,655 per annum. Minimum age limit 18, no maximum. College degree plus 1 to 3 years experience in one of the above fields, necessary. Applicants contact the Civilian Personnel Office at the above address.

Experienced estimator and engineer, capable of estimating and constructing highway projects, bridges, concrete and steel. Permanent position with highly responsible New England firm. Submit resume of qualifications and salary expected. P-1757, Engineering News-Record.

• POSITIONS WANTED

Construction Supt. General Construction. PW-8806, Engineering News-Record.

Accountant Heavy Const. Roads, Dams and Airfields. Exper. Cost, Payroll, Insurance, P. & L. Statements office manager. Please state your offer in first letter for resume. PW-1748, Engineering News-Record.

Pilot —Commercial Instrument—Production Expeditor. Presently employed on Latin-American project nearing completion. Over 10,000 hours. Sober, dependable family man. Detailed resume on request. PW-1610, Engineering News-Record.

Construction Manager and General Superintendent. 25 years experience of bidding to completion on public and industrial buildings. Desire permanent relocation. PW-1617, Engineering News-Record.

Field-office Engineer—layout, supervision computations and drafting. Experienced in Municipal and Heavy Construction. Desires to relocate. P. O. Box 53-296, Miami, Fla.

Engineer Estimator: Presently an official and Chief Engineer of large midwest general contractor specializing in industrial construction. Experience in all phases of engineering construction and administration. PW-1703, Engineering News-Record.

Construction Supt. Top level only. Available immediately. Call Akron, Ohio, Walnut 3-3695.

Construction Executive. Wide experience in industrial, institutional, and commercial field as supt., general supt., construction manager. Available soon. PW-1716, Engineering News-Record.

Physician—allround experience, German national, completed contract with US overseas construction Co., Age 33, available for foreign jobs. PW-1730, Engineering News-Record.

Master Mechanic, age 44, 25 years experience with all types and kinds of construction equipment. Shop and field supervision. Lee Stanger, 1957 Columbia, Berkley Michigan.

• POSITIONS WANTED

Civil Engineer, 33, seven yrs. Gen. Plant Engineering multi-plant corp'n; 2 yrs. Project Manager major industrial and building contractor. Bid to completion Commercial, Monumental, Industrial Bldgs. Customer sales contacts. Responsible position with opportunity. PW-1704, Engineering News-Record.

Exp. Bldg. Estimator, Grad. C.E., llc., desires to re-locate. PW-1720, Engineering News-Record.

Mechanical Superintendent, 50. Desires overseas position, 25 years experience, 18 as Supt. 4 completed overseas contracts, Venezuela and Europe. Some French. Work from metric drawings. Heavy or light machinery installation and associated work. Best references from nationally known contractors. Resume on request. PW-1719, Engineering News-Record.

Civil Engineer With Legal Education, 35. Nine years varied field & office experience obtained principally in South America. Reg. Calif. & N. Mex. Recent graduate Stanford Law School, LL.B. Desires position with possible management future in Calif. or southwest. PW-1727, Engineering News-Record.

Construction Superintendent B.S.C.E. Hvy. Earthwork, Highways, Flood Control, 15 yrs. exp. bidding, estimating, supervising. E. Elsworth, 3119 Utah, St. Louis, Mo., Pr. 3-1510.

Const. Foreman or Asst. Supt., 37. Prefers overseas employment but will accept domestic job. 20 yrs. experience commercial industrial construction. Seeking immediate employment. Good references. PW-1760, Engineering News-Record.

Bituminous & Soils Engineer, 28. BS. 6 years experience all phases bituminous concrete and soils work pertaining to highway projects. Includes pavement mix design, quality control of hot-mix plant operations, paving supervision, soil compaction control, etc. Desires to combine bituminous and soils background into permanent position with established organization. PW-1789, Engineering News-Record.

Soils Engineer—M.S. '53—Prof. Eng. N.Y.: presently completing overseas assignment in charge soils and materials testing laboratory, local staff. Work included field investigations, testing, designs and reports. Seeking permanent position with consultant, any location. Married—available mid-June. PW-1786, Engineering News-Record.

Electrical Engineer; Age: 51. 30 years experience, Industrial Power Systems. Design thru construction. Estimating, Purchasing. Minimum Salary $8100. Geo. J. Ravaux, 515 E. Washington St., Hartford City Ind.

Construction Engineer — Project Manager. Civil Engineer with 16 years of proven experience in construction of industrial and metallurgical plants, both U. S. and foreign, wishes permanent position with contractor or engineering firm. Reads, writes and speaks Spanish. PW-1792, Engineering News-Record.

Superintendent, Heavy Construction, 28 years experience, Water or Sewage Plants, Bridges. Desire to relocate, Southwest, or Central Southwestern U. S. PW-1763, Engineering News-Record.

Project Manager or Superintendent—Experienced in earth moving, Highways, Throughways, or Airports. Will go anyplace, available now. PW-1738, Engineering News-Record.

Executive—Management—Licensed P. E. Experienced plan and control multi-million dollar programs: highways, utilities, regional studies, plans, reports, construction. Some EDP, aircraft design, small housing. Spanish, Foreign preferred. PW-1740, Engineering News-Record.

Civil Engineer, M.S., Registered, Experienced field, office. Desires teaching position. PW-1775, Engineering News-Record.

BCE—25 single, airforce installations and extensive highway design experience. Desires position Portland Oregon vicinity. Available July 1st. PW-1803, Engineering News-Record.

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Serial No. 32639 Johnson 400cy fully automatic plant with individual weigh batchers automatic recording equip., inclined conveyor, cement silos, and two 4cy Smith Mixers. Meets rigid Federal Specs. Good condition ready for immediate shipment.

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Phone—Davenport 5-4495

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Dept. ENR-89 Simpson, Pa.

Tractor-Dump Trailer Combination
1955—International Model #225, Gas. 3-Way B/L, U-200 Timken Rear, 11:00x22
Sheffield 5th Wheel and Winch
Also: Clemins Cable operated tandem dump trailer, 20 yd. cap. $5,800.00
Two 1954 Diamond T, Tandem Dumpers Model #720-36M, Gas, 11:00x22 $3,800.00 ea.
1954 Diamond T, C.O.E. Tractor Model #T-720C, Gas, 11:00x22, 5th wheel $2,000.00

R. E. Meale, *District Manager*
MACK TRUCKS, Inc.
3250 Fairfield Avenue Bridgeport, Connecticut
Phone: Edison 3-3154

GAR WOOD
CLOSE OUT BARGAINS

1—1952 Model 75B—¾ Yd. Backhoe, Serial #302, G-M Diesel w/fluid cplg., 13' 8½" crawlers, heavy duty backhoe w/40" bucket. PRICE $12,250.00
1—1958 Model 75B—¾ Yd. Backhoe, Serial #312, equipped same as above. PRICE $19,000.00
1—1957 Model 100BT—25-Ton Truck Crane, Serial #188, gasoline power w/fluid cplg., power steering, 80' steel erectors, boom w/2-speed hoist, tubular stop, load lowering and hyd. counterweight removing device. PRICE $25,250.00
1—1958 Model 100BT—25-Ton Truck Crane, Serial #118, equipped same as above. PRICE $30,500.00

These machines have low hours and are priced to move quickly. F.O.B. our Yard, Bridgeville, Pa.

ANDERSON EQUIPMENT COMPANY
P. O. Box 427, Bridgeville, Pa. (Pittsburg area)
Phone: LEhigh 1-6020

FOR SALE or RENT

Northwest 6 Backhoe S/N 12738
Bucyrus Erie 38-B Crane & Drag S/N 81280

Both in excellent condition. Reduced rates for long term rental.

AIR COMPRESSOR RENTAL CO., INC.
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Price $9,000.00

Northwest Model 25—¾ c. y. Crane

40 ft. Boom 24" Crawler Treads; Pull Shovel Attachment $2,000.00 additional. Location Washington, D.C.

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FOR SALE
VERY LOW PRICE

Steel Forms for Tunnel or Culvert

Manufactured by Blaw-Knox Co.

2 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube
4 Exterior forms 40' long x 16' high

4 Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for twin tube
2 Exterior forms 40' long x 16' high

Also steel forms for air duct and walkway

All located New Orleans, Louisiana

Contact J. S. Glazer

c/o GLAZER STEEL CORPORATION
1556 Tchoupitoulas St. New Orleans, La.
TELEPHONE: EXpress 2761

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12-Ton Standard Gauge Diesel Torque Converter Locomotive, prefer Plymouth

L. R. & J. L. BEATTY
919 E. DARBY ROAD HAVERTOWN, PA.

For Sale—Immediate Delivery

Tugs: 45' 55' 65' 105'
Crewboats: 32' 38' 39' 51' 54' 110' x 30' x 6'6" deck cargo barges
Also a number of used pieces of floating equipment. Advise your needs.

EQUITABLE EQUIPMENT CO., INC.
410 Camp St. New Orleans 12, La.

Price $3,500.00

Parsons Model 31 Trenching Machine

Cuts 24" to 52" width 12 ft. deep. Full Crawler Mounted. Wisconsin Engine. Double Belt Conveyors. *Location, Washington, D.C.*

O'BRIEN & REDMOND
P.O. Box 523, Media, Pa. Phone Lowell 6-0598

Complete 16 ft. Diameter Tunnel Spread

Concrete forms, 4", 6", 8", 24" Spiral Welded Pipe, Locomotives, Muck Cars, Tunnel Agitators, Pumps, Pumpcrete machines, etc. For information and catalogue, write or phone

WESTERN CONTRACTORS SUPPLY CO.
4817 Lake St., Melrose Park, Ill.
CO. 1-8875 FI. 5-0690

Priced to Move 4—Allis-Chalmers Model TS-200's: S/N 1950; 1966; 1992; 2243; 2 with 844 Buda engines; 2 with Buda 220 engines; one engine completely rebuilt and three overhauled. All hydraulic systems and transmissions thoroughly checked; 50% overall tire wear.

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SHadyside 1-5570
10904 Brookpark Road • Cleveland 30, Ohio

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7 Euclid TS-31 twin engine scrapers. 1 year old. Short or long terms rentals on 1 to 10 units. F.O.B. Chicago area.

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EDison 3-0222

LORAIN

2 yd. Shovel Attachment complete. Used but in excellent condition. (About a $12,000 value new) $5,000 Subject to prior sale or disposal.

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Pelham Manor, N. Y. PE 8-5100 *ENR 5595*

A LARGE AUCTION

HEAVY CONSTRUCTION EQUIPMENT

FRIDAY, JUNE 12, 9 A.M., SALT LAKE CITY, UTAH

LOCATION: *The UTAH CONSTRUCTION CO. equipment yard at 480 West 21st., South.*

NOTICE The Utah Construction Company's Salt Lake City Yard is being taken out by new Freeway. This equipment, most of which is recently off of Utah Construction Co. jobs, is surplus to future needs. This equipmment belongs to Utah Construction Co. and will be sold to highest bidder.

EUCLID END DUMPS

Four Euclid 11LD Tandem End Dumps, all overhauled and not used since. Euclid 2FFD Tandem-End Dumps, fair; Euclid 5LDT & 4LDT End Dumps; 4 Euclid 7LD End Dumps, all fair condition.

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GENERATORS—LIGHT PLANTS—WELDERS

Cat D-17000 Diesel Generator Set, 112½ KVA, good; Cat D-13000 Diesel Gen. Set, 79 KW, good; GE 75 KVA Generator w/Cat RD-8 Power, fair; Westinghouse 75 KW Generator w/West. 110 HP Motor, good; GE Generator (Batt. Chgr.) w/75 HP Motor, good; Hertner 50 KW Generator (Batt. Chgr.) w/75 HP Motor, good; Burke 150 KW Generator w/Motor, good; 10 smaller Generators, from 15 KW to 2 KW; Lincoln & GE 400 amp elec. Welders; 16 300 amp electric Welders; Other Welders.

SHOVEL—GRADERS—TRENCHER—RIPPERS—CRUSHER—SCREENING PLANT—ROCK PICKER

Link-Belt LS-85 Dragline, poor; 2 Cat 12 Graders, 7T's, poor; Cleveland W-140-4 Trencher, fair; Woolridge RH-3 & LeTourneau K-30 Rippers; 2 HD Discs; Pioneer Portable Rock Plant w/15x36 Jaw, good; Pioneer Screening Plant; Bestland Rock Picker.

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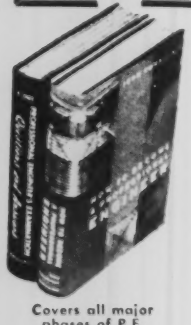

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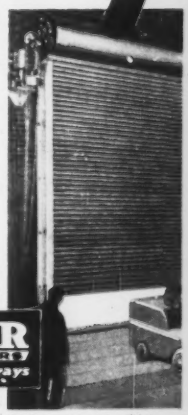

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If the building code can be kept a living, changing set of standards devised to protect health and safety at minimum cost, then no community should be without one and perhaps no state should fail to provide a flexible, modern document for its communities to adopt, or adapt, as their needs dictate.

Much as the ideal of a single, up-to-date, national building code is desirable for its economic benefits of standardization, there should be, at the very least, modern building codes for protection of health and safety in all states—even if they are not uniform.

That Wanapum Wampum

THAT $48.7 MILLION by which the low bidder came in under engineer's estimate on Wanapum Dam in Washington is quite a heap of wampum. Bidding $88.9 million, the low bidder was 35% under estimate; the high bidder, at $107.9 million, was $30 million under the estimate; and there were three others clustered in the $96 million to $99 million range (ENR May 21, p. 21).

Even in these times, as we talk blithely of millions and billions and condition ourselves to talking next in trillions of dollars, it is hard to think other than seriously about a batch of bids ranging 35% to 22% under estimate on a contract that was figured to be the biggest one ever let. It is difficult to consider this situation without some feeling of concern.

There was a time when it seemed fashionable to look at reports of bids below estimates and deduce simply that some engineer's estimating ability was subject to question. It could be reasoned that the engineer's estimate is, after all, only an estimate, that the true cost of the job to the owner is the low bid. And who should know better what construction costs than the men who actually do it—the contractors?

But in these times—especially in these times—which contractors have called times of profitless prosperity, we can't help questioning bids as well as estimates when there is an exceptionally big spread between the two. Reportedly, bids are coming in 5% to 20% below estimates quite generally these days, with contractors admitting that much of their bid price chopping comes out of profit margins. They are talking of 1% and 2% profits and calling a 3% profit good. With this kind of talk prevalent, and with memory of the big, contractor losses claimed on the St. Lawrence Seaway and Power Project still fresh, it is difficult to keep from wondering about the profit in an $88.9-million bid on a job estimated at $137.6 million.

Surely the companies that bid on Wanapum Dam know what they are about. There should be a fair profit for the low bidder, even at his very low bid. We sincerely hope there is.

It's Time for a Breakthrough

THE SCIENCE OF A GIVEN DISCIPLINE never develops at a set, steady pace. Advances come in spurts, and when scientific progress may seem to be at its slowest, a major breakthrough can come, as needed, to move things along.

Consider the engineering disciplines that serve construction. The science of structural engineering is refined to a very great degree, yet it is hardly static. The new forms, new shapes, keep coming; and the breakthrough that is limit design has yet to make itself fully realized. The science of hydraulic engineering, too, is fairly well developed, with room still for application. Soil mechanics remains a lusty young body of knowledge doing service to construction by its consistent growth. And in the realm of sanitary engineering, there is a contrast between the old, solved problems of water treatment and the new, growing problems of waste water disposal.

Sanitary engineering has seemed to have all the technology it needs for the problems of supplying pure water. Yet it has often found itself temporarily lacking in answers to the problems of specific new wastes. The challenge to expand the technology as new industries have come up with new wastes has kept sanitary engineers hopping to devise processes for treatment and disposal. The field of waste water disposal, therefore, has been a live one, full of active minds, developing new knowledge and putting it to work.

But now the sheer growth of the problem demands more than normal thinking. It is time for a major breakthrough. At the Purdue Industrial Wastes Conference this month, Gordon E. McCallum, who heads up water pollution control for the U.S. Public Health Service, issued the dire warning that needs of the future promise to become too much for current technology.

Whence might come the breakthrough Mr. McCallum hopes for? Perhaps his own agency's Sanitary Engineering Center in Cincinnati is the shining hope for the future. Or maybe the odds favor more humble origins for the next big idea in waste water treatment.

Whatever its source is to be, the need is clear: A truly big advance is called for, an advance such as the activated sludge process was 43 years ago. The problem may soon outpace even the healthy, steady progress of sanitary engineering science. A breakthrough will be needed, and it will—we are confident—be forthcoming.

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